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Was the 1940 Collapse Avoidable?

B. H. Liddell Hart

HOW different the state of the world would be if the Western Front had not collapsed in May 1940. The collapse occurred in 6 days; but it resulted in the War lasting 6 years and spreading over the world. The consequences were terrible for many millions of people and most of all for those who were the momentary victors.

Yet Hitler's victory in 1940 was by no means inevitable, though it looked so after the event. The 1940 collapse in the West gave rise to the wildest notions and explanations. More nonsense has been written about it than about any other event of the War. That is not surprising, because it was the greatest of all shocks.

Throughout the first winter of the War, the public had been lulled and gulled by an unceasing flow of "hot air"—in Parliament, in the press, and on the radio—about the strength of France and Britain. There was far more talk and thought of what they were going to do to Germany than of what she might do. Acutely conscious of how unjustified such talk was, I kept a day to day record of what the leaders of the nation and of national opinion were saying. The record looks almost unbelievably absurd now. Never did so many boast so much about so little.

The War Legends

When the shock of disillusionment came, opinion swung to the other extreme. The collapse came to be regarded as having been certain from the start, the inevitable result of factors that were magnified out of all proportion to the facts. For in such a climate, legends quickly grow. Truth is slow to catch up with legend, and it has not done so yet.

The first legend sprouted in the very first days of the invasion. Hosts of parachutists were said to be dropping in all the invaded countries, often disguised as priests or nuns—a religious vocation became a dangerous profession in those feverish days. Such stories are widely believed even today. In reality, there were only some 4,500 German parachutists altogether, of whom 4,000 were used in the corner of Holland between Rotterdam and The Hague. The remaining 500 were employed on one short stretch of the Belgian frontier—to capture the crossings of the Albert Canal. None were used in France. To supplement the shortage of real parachutists, dummies were dropped at a variety of points. They not only caused a scare for the moment, but fostered a long-lived legend.

The German attack into Northwest Europe in 1940 changed the course of history, with far-reaching effects on Europe's future, but it could have been checked if the Allies had understood the new armored warfare

A second piece of fanciful history is that the success of the German invasion was due to widespread treachery and the help received from a vast Fifth Column. While there was reason for the suspicion that Nazi agents and sympathizers hindered the defense at some points, it is clear now that the importance of this factor and the dimensions of the Fifth Column were immensely exaggerated. The defense suffered much more from muddle-headedness and panic than from treachery.

Another myth that became current after the event was that the defeat was due to the Allies, and particularly the French, being too defensive-minded. "Maginot-minded" was the popular term of scorn in subsequent argument. That notion was not easy to reconcile with the fact that the much-discussed Maginot Line covered only the easterly half of the French frontier and had not been extended westward. It was refuted by the fact that no serious attempt had been made to fortify the sector along the Meuse where the Germans actually broke into France.

But those who cherish myths are not concerned with facts and reasonable deductions. In reality, the captured files of the French High Command show that during the first 9 months of the War it was occupied in planning offensive moves to outflank Germany, though it lacked the strength needed to give these dreams any chance of success. Moreover, the pattern of the ill-fated Plan D, which the French Command tried to carry out as soon as the Germans moved, clearly bears the mark of being designed by offensive-minded soldiers who are unwillingly reduced to practicing defense. That bad compromise was its basic fault.

It is not correct that Hitler's victory was assured by an overwhelming superiority of force. Germany did not mobilize as many men as her opponents did—at the expense of their arms production. The Germans managed to form and equip more divisions than the French did, but they had no advantage in numbers over the total array of opposing divisions in the West. That did not matter. For the issue was really decided by the deep-driven thrusts of a picked 8 percent of their Army—their 10 armored divisions—before the bulk had come into action.

Tank Forces

That was not due to the German Army having a much greater number of tanks, as was naturally imagined at the time. Whereas the French estimated that the Germans had 7,000 to 8,000 tanks, we now know that they had less than half this number. Only 2,800 tanks were used by the Germans in the first, and decisive, phase of the invasion. But they were used to the utmost advantage.

The French had almost as many tanks; but they were not so mobile, and the greater part of them were scattered as small packets instead of being concentrated for a powerful punch. The French generals still clung to the 1918 idea that tanks were the servants of the infantry, while Hitler had listened to Guderian, the leader of the new school, who argued that armored divisions should be the spearhead of the army. Hitler's backing made the older generals more inclined to swallow their doubts and accept the newer idea.

Similarly, Hitler had gone all out for air power. Here he did have a big superiority in numbers, approaching 3 to 1, and he scored most heavily through having developed a mass of dive bombers to combine with his tanks. The French military chiefs had tended to underrate the value of air power until it was too late to remedy their prolonged neglect of the air arm.

Even so, much more than this was required to produce such a victory as Hitler gained. Neither his advantage as the aggressor, nor his advantage in forces, counted for as much as certain extraor-

dinary blunders on the other side—blunders of a kind that no planner of aggression could bank on. But even these would not have been decisive save for a string of lucky turns that were quite incalculable.

Allied Blunders

The invasion of Holland is the first illustration of this fateful combination. It was a subsidiary part of Hitler's plan, and the forces he could spare for it were much smaller than those the Dutch had mobilized. But the Dutch Command reshuffled the disposition of its forces on the very night that the Germans were moving up to attack, and this side-step left a weak spot just where the German command had placed the solitary armored division it could spare for the invasion of Holland. As a result, this division was able to rush through and race for 90 miles along an almost clear path, to reinforce the parachute troops who had dropped around Rotterdam. Even then, the German forces at this far-advanced point were still greatly outnumbered, but the daring stab at the heart of Holland cloaked the weakness of the invaders and created a paralyzing confusion. Coupled with the threat of air attack on Holland's crowded cities, it led to the Dutch surrendering 2 days later, although their main front was still unbroken.

German tanks move across the St. Halaire airfield, south of Rethel, France, on 12 June 1940. The photographs with this article are reproductions of captured German films.

The keys of the Maastricht gateway into Belgium were secured by a few hundred airborne troops, silently descending in gliders out of the dark. The two essential bridges over the Albert Canal were captured intact, before they would be blown up. The covering fort of Eben Emael, dominating the Canal, was paralyzed by a mere 80 such men who "squatted" on top of it and dropped explosives into the gun muzzles and casemates. This

triple coup had been Hitler's own idea, and its possibility had been doubted by most of his generals.

Studying the operation step by step on the ground, after the War, I saw how decisive had been the effect of one big oversight and several chance factors. The bridge defenses and the Fort were well prepared to meet anything except the possibility of troops arriving immediately overhead. Thus, they could not bring fire to bear on the assailants at the crucial moment. Nevertheless, at the main bridge, the fuse was actually lit. But the crew of one glider got into the blockhouse, on the heels of the sentries, just in time to extinguish the fuse. At Eben Emael, a counterattack that might have cleared the paratroops off the top of the Fort was cancelled through a misunderstood message.

By next morning, sufficient Germans had accumulated beyond the Canal to burst through the shallow line of defenses behind, while two armored divisions poured over the unblown bridges and drove into the plains beyond. The menace led the Belgian forces to start a general retreat, just as the French and British forces were arriving on the Dyle to their support.

This break-through near Maastricht was not the decisive stroke of the campaign, but it had an important bearing on the outcome. It created a whirlpool which sucked in the French mechanized divisions, so that these could not be drawn out and switched to check the deadlier menace that arose farther south. The bulk of the German armored and motorized divisions was sweeping towards the French frontier through the wooded hills of the Ardennes.

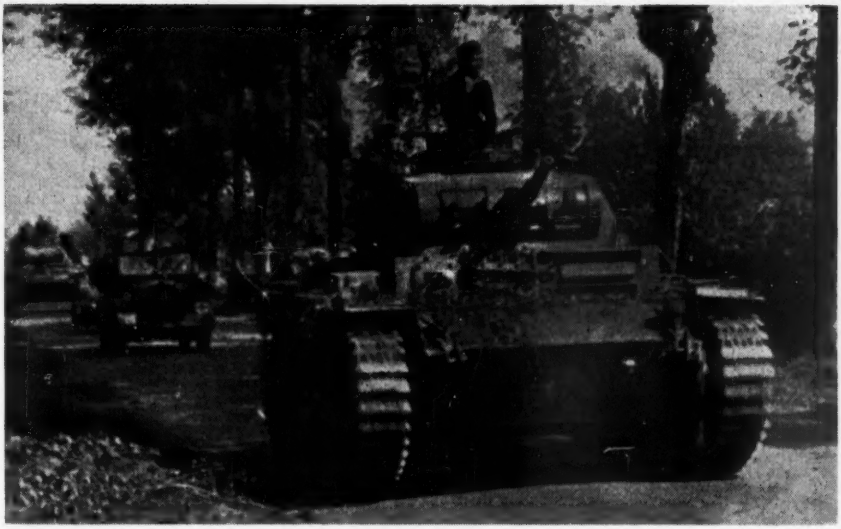
It was a daring venture to thrust a mass of tanks through such difficult country, but the gamble came off and caused the downfall of France. We know now that it was due to a late change in the German plan. The change was suggested by a staff officer of imagination, General von Manstein, after he had consulted Guderian and been assured that a tank drive through the Ardennes was a practicable operation.

Change in German Plan

The original plan had been to make the main push in the north with the right wing, as in 1914. If that plan had been carried out, it would have run head-on into the best part of the Anglo-French forces. It might have pushed them back, but it would hardly have succeeded in cutting them off, as the new plan did.

Manstein felt that the original plan lacked the essential element of surprise—especially as it repeated the general line of the 1914 plan—and had no promise of proving decisive. The boldness of the new conception appealed to Hitler. But the definite decision to change the original plan was produced by an extraordinary accident when, on 10 January, a staff officer who was carrying papers about the plan lost his way in a snowstorm and landed by mistake in Belgian territory. The German High Command naturally feared that he might have been unable to destroy the papers (and, in fact, his attempt to burn them was a partial failure). Even then, the Commander in Chief and the Chief of the General Staff hesitated to turn the plan around so completely as Manstein had proposed. Their resistance was only overcome after Manstein, going behind the backs of his superiors, had seen Hitler personally and gained his decisive support for the unconventional project.

Hitler had originally wished to launch his offensive in November 1939, but successive postponements were caused by the weather, thus providing time for Manstein to pursue his arguments, as well as for the mishap in the snowstorm. In this double way, bad weather contributed much to the eventual success of Hitler's offensive.



The German attack in the West in 1940 would have bogged down if it had not been for the tank forces, according to Liddell Hart. Above, elements of the German 4th Armored Division moving against the French Foreign Legion near Englefontaine on 21 May 1940. Below, German infantry, protected by tanks, digging in along a road at Englefontaine.

During the interval, false alarms had led the Allies to show their hand and their intention of advancing in force deep into Belgium. That disclosure, too, strengthened the case for changing the German plan in the way Manstein advocated.

The Ardennes

Strangely, it did not lead the Allies to vary their plan—which was a further piece of luck for Hitler. But the supreme blunder of the Allies, when rushing forward into Belgium, was to leave the hinge of their advance, facing the Ardennes, to be guarded by only a few inferior-grade French divisions. Thereby, the plan framed by Gamelin and Georges fitted perfectly into the new German plan. That crowned Hitler's run of luck. It was also the clearest proof of how foolishly offensive-minded the French generals were.

Another example was their attitude to a proposal that the forest roads leading across the French frontier should be blocked by the simple and effective expedient of felling thousands of trees. This proposal was turned down on the ground that the roads must be kept clear for the advance of the French cavalry!

Even then, the chance of checking the Germans was better than it looked subsequently. Only Manstein and Guderian, besides Hitler, seem to have been really confident of success. Most of the generals have frankly admitted that they were full of doubts beforehand, and they were astonished to find such weak opposition along their difficult line of advance. They knew the Ardennes contained many awkward bottlenecks and feared they would find these strongly held.

One of the biggest worries of the German generals was that air photographs showed a large fortified bridgehead on the Meuse covering Sedan. But just before the start, an Austrian expert reexamined the photographs and detected that the fortifications were unfinished. This was a great relief to Kleist, who was in command of the whole mobile striking force of Rundstedt's Army Group. With such reassurance, Kleist felt that he could race on ahead of the infantry. That gain of time forestalled the belated movement of the French reserves.

On the way through the Ardennes, the German tanks met only some old-fashioned cavalry, who were easily swept away. Guderian's *panzer* corps, which was leading, reached the Meuse on the 13th, and there found merely a thin chain of pillboxes. Moreover, the defenders, being low-category troops, had been allotted few antitank guns.

Despite that luck, the crossings succeeded at only one point out of the three tried that day. The foothold was soon extended, and thus sufficed, as Guderian lost no time in exploiting the opportunity. But the local checks had shown that a general check could have been imposed by any adequate defense.

Another *panzer* corps got across at Monthermé a day later. That place lies in a deep gorge where one resolute and well-equipped battalion should have been able to hold up an army corps. But the French division on this sector, besides being composed of old reservists, had not a single antitank gun!

Panzer Warfare

Once across the Meuse, the tanks bowled along the roads that led west, meeting scarcely any opposition. In a week, they reached the Channel Coast, 160 miles distant, and cut off the Allied armies in Belgium. Dunkirk and the fall of France were the sequels. It was the easiest-won victory in history.

Why was nothing effective done to stop the invaders during that week? There were several stop-lines that could have been used by any defense expert who understood tanks.

One reason was that the pace of *panzer*

warfare paralyzed the French Staff, whose minds were still moving at 1918 tempo. The orders they issued might have been effective, except that they were repeatedly 24 hours late for the situation they were intended to meet.

Another reason was that the French Staff was always trying to mount massive counterattacks, instead of hurrying to man the stop-lines. Time after time, the Germans drove over these lines, while the French reserves were gradually assembling on the flank. The French Staff was too content to follow an old offensive theory, regardless of what was happening in practice. In that obsession, they threw away chance after chance of balking Hitler's gamble.

The irony was that the German Staff had not reckoned on any such complete success as it obtained. Even Hitler had originally aimed at no more than to give the French a knock that would incline them to make peace, and to occupy part of the Channel Coast so as to put the same peace-seeking pressure on England. The aim of conquering England was not in his mind.

But Hitler became the victim of his own victory. Although succeeding beyond expectation in his invasion of the West, he was baffled by the stubbornness of the British. It is remarkable to find how far he was prepared to go in conciliating them, at the moment when he was in the flush of his triumph and they had been almost unarmed. Unable to understand why they spurned his offers of peace, he drifted along with the current of the war he had unloosed, and eventually he came to grief.

If Hitler had been checked at the outset, it would not have saved him. But the world would have saved much.

We know now that even Hitler's own generals were waiting for such a check to loosen the trust of his propaganda-fed people and give them a chance to overthrow him.

Luck and Shortsightedness

Hitler's fatal success owed much to an extraordinary run of luck, but it owed even more, at every stage, to the shortsightedness of his opponents. The statesmen of France and Britain had smoothed his path by failing to see where their policy was leading. The soldiers were equally shortsighted in their sphere. The breakdown of 1940 was basically due to the way that military orthodoxy prevailed over modern ideas—not only at that moment, but for 20 years before. The French and British—except for the small band of modern thinkers who preached the idea of mobile-mechanized warfare—had been preponderantly conservative ever since their victory in 1918, whereas the Germans had been spurred by their defeat in 1918 to become relatively progressive. That is the key to what happened on the battlefields of 1940.

Hitler would have "got nowhere" without the tank forces that Guderian had created and trained. The decisive success of Guderian's break-through at Sedan and the swift drive to the Channel Coast changed the course of history and has had far-reaching effects on the future of Europe. Yet it could almost certainly have been checked if the directing minds on the other side had understood the new style of warfare and thus known how to counter it.

The future of armor is limited only by the ingenuity of American industry and the resourcefulness of the officers and enlisted men who belong to armored units. To those qualities there are no limits—nor are there to the future of armor.

General Jacob L. Devers

The Dilemma of Close Air Support for Ground Combat

Major John M. Barnum, *Field Artillery*

The views expressed by the author in this article are his own and not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

NUCLEAR Fission! Atomic Warfare! Polar Concept! Autonomous Air Power! Radar Fence! Russian Vetoes! B-50 Circles Globe! Super Carriers! Congressional B-36 Investigations! Arms Aid to Europe! Russian A-Bombs!

Those are the headlines. And the tense, dread-filled atmosphere stamps out the back page. Air power's revolutionary developments during and since World War II have brought new problems. The new tends to overshadow the old, sometimes to the point where one finds it difficult to realize that an old problem still exists. So it is with the matter of close air support for ground troops on the battlefield. It is not new. And it is not solved.

During World War II, Army Ground Force's Lieutenant General Lesley J. McNair was deeply concerned with the matter—literally, to the day of his unfortunate death. His was a personal as well as a professional interest. He died a victim of friendly bombs, dropped at St. Lô, France, on 25 July 1944. He had stressed continually that the co-ordinated air-ground effort was the most difficult and most important of all joint operations. He was not alone in his opinion. Army Air Force's General H. H. Arnold, late in 1942, addressed a sharp memorandum to his Director of Air Support, ordering him to take:

> . . . personally . . . the necessary steps to impress upon all concerned not only the necessity for absolute teamwork between the Air Support and Ground elements, but also the very thorough step by step training necessary in all of the Air Support elements in order to develop the technique and procedure so essential to bring such teamwork about. . . . This is something that I have been pounding on now for over a year—apparently with little success.

Viewed in relation to the more vivid events of mid-1949, there is nothing spectacular about the purported notable victory which Army Chief of Staff General Omar N. Bradley and Army Field Force's General Jacob L. Devers scored in wringing from the Air Force an agreement to give greater emphasis to tactical air power in future Air Force planning. Also, in light of the difficulties encountered during World War II on the same matter, it is obvious that they were dealing with an old problem and not with one which has arisen only since the advent of an autonomous Air Force. Perhaps the ordinary, commonplace nature of the problem in itself has contributed to its age. Whatever the cause, its continued existence, after nearly a decade of war and peace, indicates that there is a crying need for a solution.

But where does the basic misunderstanding lie? Will the Army be satisfied if the Air Force fulfills the recent commitment which Generals Bradley and Devers obtained?

> "Air Force intentions and spirit of co-operation are fine," he [Devers] told reporters. "We are working well together. What we have now are assurances, not guarantees. But I think if we keep after them—keep bouncing them—things will be all right."

How long will this solution be acceptable to all concerned? Will there be other

points upon which misunderstanding will arise? Do the present plans, developments, and organizational principles of the United States Air Force, in so far as they pertain to the close support of the Army, offer the best solution to the problem?

The Problem

For an answer, one must turn to the problem itself; examine it in the light of probable Army requirements; analyze the manner in which the Air Force proposes to fulfill those requirements; compare requirements and proposals; determine whether there are any discrepancies; and seek alternative measures which will most nearly meet the demand for a well co-ordinated, effective fighting machine. Nothing less can be acceptable.

First, of course, there should be agreement on the use of the term "support." This word has gained, in some circles, a disagreeable connotation of servility or inferiority. Such connotation is foreign to realistic military thinking. A more accurate interpretation will be found in terms of aiding or assisting, of mutual efforts toward achieving a common goal, and of a co-ordinated drive bent on accomplishing a common mission. The mission itself should determine the respective identities of the supporting and the supported elements.

The initial task is to establish the general, and some of the specific, Army requirements for close air support. It is only reasonable that there be considered, concurrently, a fair justification for those requirements. On this point, the writer and certain of the more resolute followers of the Douhet-Mitchell-Seversky axis of strategic air power may appear to hold different views. However, since the decisive nature of strategic air power does have some bearing on the general Army requirement and its justification, it will be necessary to review the field briefly. Also, the impact of strategic air planning on the capabilities of tactical air must be considered.

The manner in which the United States Air Force proposes to fulfill Army requirements poses some minor difficulties. For security reasons, certain factual data, especially in the development field, must be excluded. This is not necessarily fatal; it simply requires closer adherence to generally recognized facts. Conversely, on certain matters of policy, there must be included more than simply the stated concepts of the planners. Here too, facts may have a bearing.

A comparison of requirements and proposals provides a fertile field for misunderstanding between the die-hards on both sides. Here lies the crux of the whole matter. Undoubtedly, the majority of those most vitally concerned will agree that the battlefield would provide the surest test of the air-ground battle team's adequacy. The final nature of such a test, however, lends flavor to the prior employment of all other available means of comparison.

Even at the end, there will doubtless be honest differences of opinion on the measures necessary to achieve the ultimate in air-ground effort. Men of good will, both in the air and on the ground, can probably bring forth a wealth of additional facts, statistics, and opinions to bolster their stand. Nevertheless, a step in the right direction will have been taken if there is mutual recognition that a problem exists and there is a clearer under-

In this article, the author contends that the existing system for close air support for ground troops on the battlefield fails to meet ground force needs for speed and simplicity in securing fire support

standing of some of the reasons for that problem. Then, at least, the atmosphere may clear, and perhaps the path to a better answer will appear. When that answer is found, there will no longer be any dilemma on the subject of close air support for ground combat.

Army Requirements

The Secretary of the Air Force stressed in a recent address:

> The strategic bombing elements of the Air Force are, therefore, primarily designed to destroy—at the very outset of hostilities—the enemy's means of making and supporting an attack against this nation and its allies. This vital role, well done at the proper time, is the essential foundation—the beginning point—in the joint plan for using the mobilized land-sea-air team. . . . The Air Force is fully aware that a future war can be won only by the highest degree of teamwork among the three services.[1]

Recognition of an Army role is not limited to the head of the United States Air Force. As one renowned Navy writer has expressed it in a current publication:

> Victory involves tearing the enemy away from the ground area which is the foundation of his strength . . . all elements of armed power may give indispensable help in accomplishing this result, but in the end possession of the land must be exercised by the foot soldier.

General Omar N. Bradley, then Army Chief of Staff, added emphasis to this point in a typically pungent manner when he stated:

> However crippling air attack may be, I am convinced beyond any reasonable doubt that should this nation be forced into still another conflict, we shall once more be forced to gain the inevitable victory over our dead bodies—those of our soldiers on the ground.

But, one might ask, why belabor the obvious? Why persist in hammering home a point which everyone accepts? Simply because, if the need for an Army in a ground combat role is so obvious and so universally recognized, there would have been no necessity for three distinguished spokesmen from three different services to have re-emphasized that point within the current year. Before one can consider the need of the Army for close air support, the need for an Army itself must be recognized.

There is a further premise which needs clarification if one is to approach the problem objectively. The Army's need for close air support must be couched in terms of that support rendered by airborne weapons, not in terms of the organization controlling and employing those weapons. The basic need is relatively unchanged whether the airplane carrying the weapon bears the insignia of the United States Air Force, United States Navy, United States Marines, Army, Allies, or no insignia at all. Actually, of course, there is one organization to which the Army looks primarily for support. This organization will appear in subsequent sections.

Since the primary military consideration is the mission, it might be well, at this point, to pause and review the mission of the Army, and the manner in which that mission is accomplished. The combat mission of the Army might be summed up as the imposition of this nation's policies (in conjunction with the Navy and the Air Force) upon an enemy nation by force of arms, with an intermediate objective of destroying the enemy nation's defending armed forces. This mission involves seizing and holding ground. International agreements, explicit or tacit, limit or outlaw the use of certain weapons. If this nation's policies should include a desire for minimum necessary destruction, in the interest of a cheaper postwar rehabilitation, the Army, as well as the other services, is further limited in the application of its military power. Within those limitations, the Army requires and uses all available weapons, physical or psychological, which will enable it to accomplish its mission with the minimum expenditure of men, materials, and time.

Seizing ground involves offensive action. Holding ground involves either offensive or defensive action, depending on the circumstances. The Army must be prepared to employ either successfully. In fixing responsibilities, the Army divides combat

land areas into zones (offensive action) and sectors (defensive action). Within his zone or sector, a commander is responsible for seizing or holding the ground assigned. This responsibility originates, in a sense, in the national government and proceeds through a chain of command down to the lowest commander assigned a zone or sector.

Each commander is allotted tools commensurate with his responsibilities. Some of these tools are organic, that is, assigned to the commander in fixed amounts. Others are made available by higher headquarters for the commander's use for a specific operation. Still others are retained by a higher commander and are used by that higher commander to assist various subordinate commanders in executing their share of the higher commander's mission. Finally, responsibility for the conduct of land warfare rests with the Army.

The pertinence of this elaboration on the Army mission may, at first glance, appear rather elusive. It will become more apparent later.

General and Close Support

And now, what are the general Army requirements for air support? At some point, which can be fixed only academically, these requirements may be separated into general support and close support components. An attempt will be made to separate the two, but it must be admitted that the line will be, at best, rather nebulous.

Airborne weapons have proved themselves enormously potent wherever employed. In a strategic role, even if their decisive effect is denied, they have created vast gaps in enemy military power. It has been said with authority that strategic air power applied against Germany in World War II, "brought the economy which sustained the enemy's armed forces to virtual collapse." Thus, in a sense, strategic air attacks became a general Army requirement.

Another glance at World War II in Europe suggests two further requirements:

> Disruption of enemy lines of communication has been credited by German commanders as one of the most important factors contributing to their defeat in the West. . . . The attack against German lines of communication never let up. There were special plans drawn and executed to isolate particular areas for a specific purpose. . . . Finally, allied tactical aircraft, particularly fighter-bombers, harassed German movements within this area (Seine, Paris-Orleans Gap, Loire River) to such an extent that movement during the daytime was prohibitive.

This lesson must be examined from two angles. Air weapons can severely restrict lines of communication and so hamper movement within an area as to make it almost prohibitive. It follows logically that the Army must be protected against such action on the part of enemy air power. Otherwise, the Army cannot accomplish its mission most effectively. The Army needs friendly air superiority. From the other angle, it is apparent that the severing of enemy communications and restriction of enemy movements would enable the Army to accomplish its mission more rapidly and with fewer losses. These activities are known variously as "isolation of the battlefield" or "interdiction of the battle area." Whatever its name, the Army needs it.

All these elements, strategic bombing, gaining air superiority, and interdiction of the battle area, have been loosely lumped together as general, or indirect, support. They tend to cripple the enemy's ability to bring additional pressure to bear against the forces seeking to gain the ground he holds. As such, they have a material bearing on the Army's job of destroying the enemy and supplanting him on the ground. But, in terms of weapons, and the Army's mission, can they all be lumped together in such general terms? This question warrants further study. Meanwhile, it would be well to go on with additional Army requirements.

Turning once more to the past, it has been indicated that:

> Typical medium and light bomber objectives were interdiction of battle areas by means of destruction of lines of communication, destruction of enemy strong points, destruction of enemy fuel and ammunition dumps, and saturation carpet bombing of enemy front-line positions in preparation for advance of friendly forces.

And further, again referring to World War II in Europe:

> Specifically, 36 percent of all fighter-bomber sorties was close co-operation on the battlefield. . . . Fighter-bombers co-operated on the battlefield by attacking enemy strong points, by pinning down enemy movements, by attacking hostile batteries, tanks and motor vehicles, and by providing armored column cover for our own forces moving into battle or pursuing a retreating enemy. . . . In assessing the Allied Air's close co-operation with Allied ground forces, the German commanders generally felt that heavy carpet type bombing in the main line of resistance was the type air action most detrimental to "German ability to defend a position."

These, in brief, are some of the types of air missions which have been found effective in the past. Various writers, including one military airman, have advanced the view that, "One of the major rules of Tactical Air Power in a future conflict may be the prevention of a hostile force from engaging in a battle with our surface forces." In the words of Shakespeare's Hamlet, " 'tis a consummation devoutly to be wished." But until the day of consummation; until World War II's 36 percent fighter-bomber sorties in so-called close support can be reduced to zero percent with no resultant ill effect on the Army's mission, there will still remain an Army requirement for close air support of a nature similar to that quoted above.

Weapons

And now, what does this support requirement mean in terms of weapons, their employment, and the mission? Perhaps a comparison of various weapons will shed light on the matter. Land armies gain ground essentially by employing the elements of mobility, fire power, and shock action. Tactics dictate the where, what, how, when, and the degree or magnitude of employment of the various elements. Different weapons possess these elements in varying degree. Mobility is dictated by the mode of transportation. Fire power is determined by the amount of metal delivered at the desired point in a given period. Shock action is the psychological result of a combination of explosive force, noise, and the appearance of a weapon or its carrier.

Artillery and mortars are characterized generally by limited mobility, limited range, heavy fire power, and considerable shock action. Armor possesses artillery's heavy fire power. Armor's formidable appearance increases its shock action; its mobility lends added effective range. These weapons are employed in close support of infantry; they also attack enemy strong points, pin down enemy movements, attack hostile batteries, tanks, and motor vehicles, sever enemy lines of communication, and interdict the battle area. Armored weapons additionally attack positions, dumps, communication centers, and other critical objectives deep in the enemy's rear. Artillery and infantry support them in this role.

Airborne weapons possess enormous fire power. Their carriers' speed and appearance enhance the shock action of the weapons themselves. Their mobility is the greatest of all the weapons available to the Army. This mobility vastly extends their effective range. The relatively unstable firing platform requires that highly technical equipment be used to attain maximum accuracy in placing the fire power on the desired target. Three dimensional operation increases communication and control difficulties. Airborne weapons can attack tactical targets similar to those attacked by artillery and armored weapons. However, these attacks can be made on a vastly wider front and deeper in enemy territory over a given period of time. And, since they are conducted in the air, they are relatively in-

vulnerable to interference from the ground, a limiting factor which applies to both artillery and armored weapons.

Viewed objectively, it will be seen that there is a startling similarity among the various weapons *when employed in a tactical role.* All three employ mobility, fire power, and shock action against the enemy military forces, their supporting military installations, and their military lines of communication on the ground. All are offensive weapons; all can be massed; all can achieve surprise; all can co-operate toward a common objective. That objective is the possession of a piece of ground and its denial to the enemy; the destruction or the effective neutralization of an enemy's military power.

As indicated previously, the Army's mission involves the seizing and holding of ground. In accomplishing that portion of its mission, the Army employs the elements of fire power, mobility, and shock action. These elements must be combined in the most effective manner. So far as weapons are concerned, this means that their fire power and shock action must be applied at the right time, in the right place, and in the right quantities to further the accomplishment of the Army's mission with the minimum expenditure of men, materials, and time. This requirement applies equally to artillery weapons, to armored weapons, and to airborne weapons. That is the Army requirement for close air support.

What is close air support? Well, that must depend on an interpretation of the term "close." If an artillery weapon interdicts a crossroad within the zone of action of a numbered army, that is close support of the numbered army's effort. If an armored division, exploiting a breakthrough, isolates a communication center which is the numbered army's objective, that is, necessarily, close support of the numbered army's effort; in fact, it is concentration on the immediate effort of the army. It is academic to hold that similar activities conducted by airborne weapons are not close support.

A more literal interpretation may be found by considering close air support in terms of the objective. Thus, fire power applied within a numbered army's zone of action up to and including its objective might be considered close support, regardless of the weapon supplying it. The same principle can logically be applied to the zones and objectives of army groups and of units below numbered army level. The writer, in referring to close air support, applies that principle.

Essential Factors

These, then, are the essential propositions which have material bearing on the Army requirements for close air support:

1. Within the foreseeable future, the Army will engage in land warfare in the event of a major war.

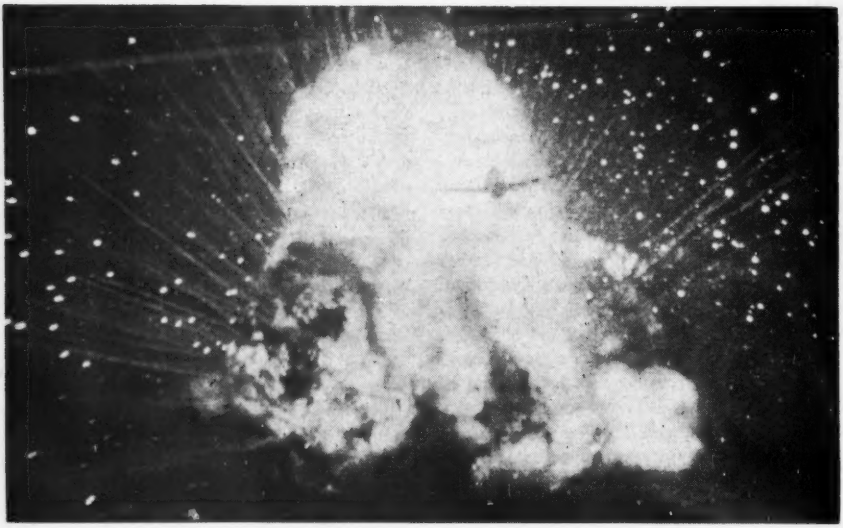
2. The Army is responsible for the conduct of land warfare.

3. The Army's mission involves the seizing and holding of ground and the destruction or neutralization of enemy armed forces. Commanders are charged with the responsibility for executing that mission within prescribed land areas.

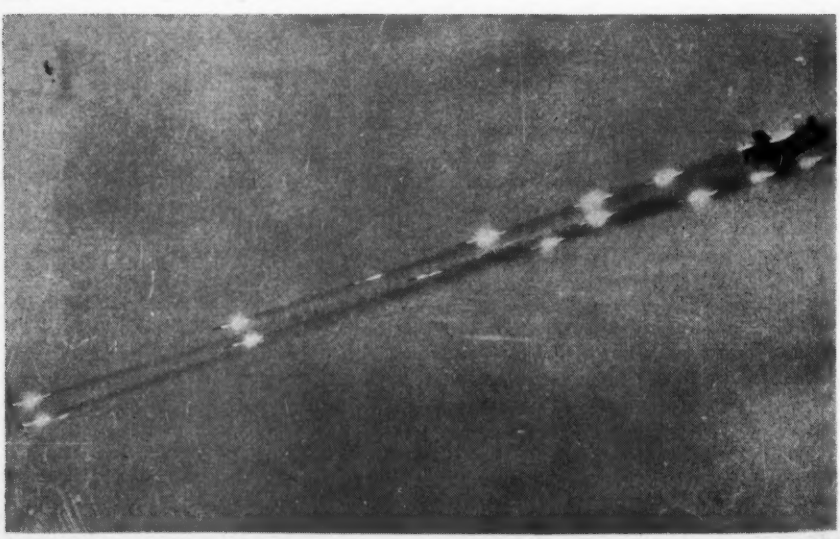
4. In gaining its objective, the Army, employing mobility, fire power, and shock action, requires the application of fire power at the right time, in the right place, and in the right quantity to assure success with the minimum expenditure of men, materials, and time.

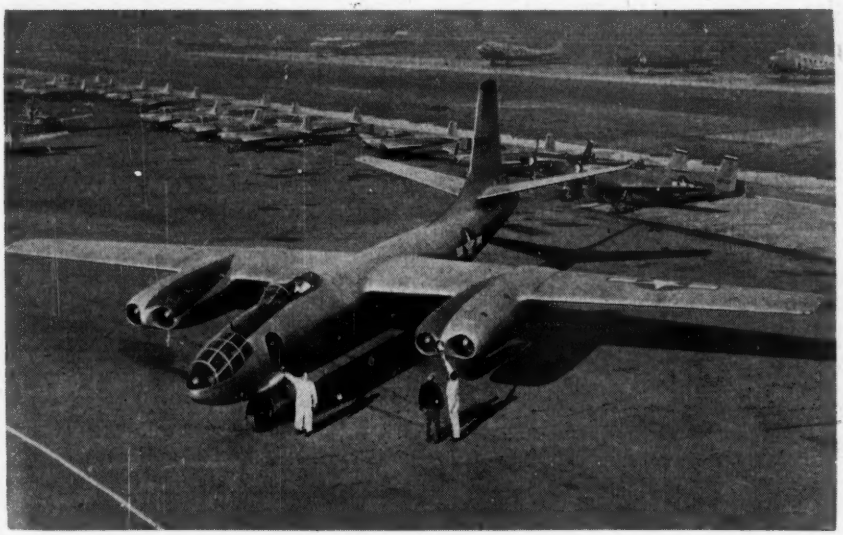
5. Close support fire power may be literally interpreted as that fire power applied within a ground command's area of responsibility, to include the assigned ground objective of that command.

6. The Army's need for air support, viewed objectively, must be considered in terms of support rendered by airborne weapons, and not in terms of the organiza-

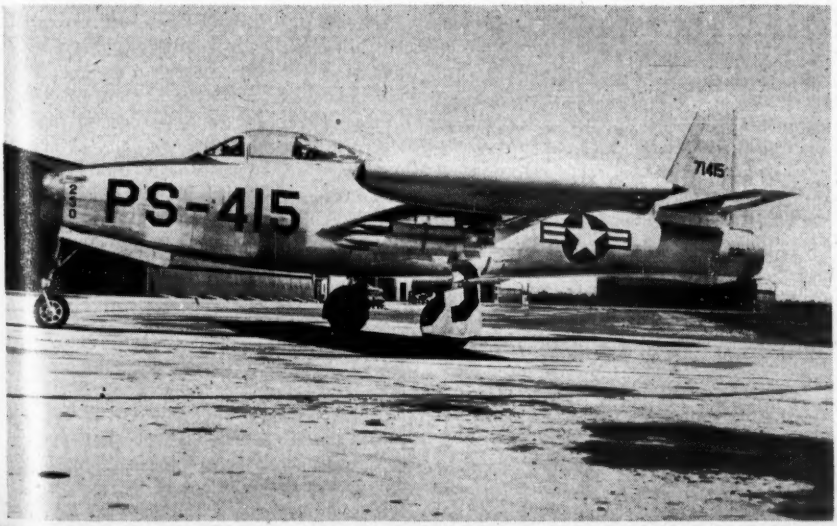


Despite many fine examples of close air support for ground troops on the battlefield in World War II, the author believes the problem is still unsolved. Above, a P-47 of the 9th Air Force scores a direct hit on a German ammunition truck. Below, an F-82 firing 5-inch rockets during a demonstration at Eglin Air Force Base.—US Air Forces photos.





Differences over command, a complicated system of processing requests for air support, and inaccuracies of jet aircraft in delivering fire power are problems of air-ground support. Above, the B-45, which is used by an AF group for support of ground operations. Below, the F-84, showing rockets in place under the wing.—US Air Force photos.



tion controlling and employing those weapons.

7. When employed in a tactical role, there is a startling similarity in the fire power effected by artillery, armor, and airborne weapons. They can be effectively employed against similar type targets. Circumstances dictate which can be most effectively employed against a specific target. Their principal difference lies in their varying degrees of mobility, fire power, shock action, and range. Mobility, in turn, affects their flexibility or their varying capacity for employment over a large area in a given time.

Having thus considered the Army's needs, one must turn next to a study of the means whereby those needs are to be met. Since the United States Air Force has been designated as the principal supplier of those means, it is only natural that one should turn now to a consideration of that agency's proposals.

Air Force Plans

Among the agreements reached by the Joint Chiefs of Staff and put into effect by the Secretary of Defense shortly after the creation of an autonomous Air Force is one relating to co-operation between the United States Air Force and the United States Army in the conduct of land warfare. This agreement, defining the responsibility of the Air Force, is:

> To furnish close combat and logistical air support to the Army, to include air lift, support, and resupply of airborne operations, aerial photography, tactical reconnaissance, and interdiction of enemy land power and communications.

For present purposes, examination of this agreement may be limited to those matters dealing with organization, plans for tactical operations, and material developments in the field of close combat support. A study of existing structure is of interest only in so far as it reflects the amount of current emphasis placed on that support. Of greater import is the manner in which the Air Force proposes to furnish that support in wartime. The following description of the existing structure is included, therefore, simply to provide background information.

The United States Air Force is organized, in descending order, into commands, numbered forces, divisions, wings, groups, and squadrons. The Continental Air Command, co-equal with Strategic Air Command and others, is designated as the major command to discharge Air Force responsibilities for air-ground operations. Continental Air Command has, in turn, delegated its functions in this matter to a subordinate headquarters, the Tactical Air Command. The Tactical Air Command, having no assigned combat elements, functions primarily as a planning and advisory headquarters. Upon occasion, for special joint training operations, combat elements of Continental Air Command's subordinate numbered air forces may be placed under operational control of the Tactical Air Command. The latter then becomes, in fact, an operating headquarters.

The Secretary of the Air Force, in stressing the relative priority his service has placed on operations other than strategic bombing, has alleged that, upon mobilization, more than 80 percent of the Air Force would consist of groups primarily equipped for purposes other than strategic bombardment. Actually, there is only one group specifically organized and equipped for support of ground operations. That group is presently equipped with jet B-45s. According to a responsible officer of the Air Matériel Command, no additional B-45s will be procured. This one group's primary mission is the development and maintenance of tactical doctrine and practices for close ground support. This would indicate that somewhat less than 80 percent—rather closer to 2 percent, depending on the varying number of groups authorized—is devoted to the support of land

and sea operations. Additional groups have a dual mission of interception and ground support. One must decide for himself whether there is any incongruity in the two missions. Interception requires super speeds, high rate of climb, extreme maneuverability, and relatively short endurance. It is questionable whether these are especially desirable characteristics for close ground support. So much for the Air Force in being.*

Tactical Air Command

In wartime, the Air Force visualizes a tactical air command as the air counterpart of an army group, each functioning under a theater air commander and a theater ground commander respectively. If a new army group is created, it will be necessary to create a tactical air command to work in conjunction with it. The major subordinate organization under a tactical air command is a numbered tactical air force. A numbered tactical air force is specifically organized to operate in conjunction with a numbered army. Control of subordinate air units is centralized at numbered air force levels. Ground units below numbered army will have no specific air units working in conjunction with them. Thus, all requests for air support by corps, divisions, regiments, battalions, and similar units, must be forwarded to their numbered army for consideration.

Air Force doctrine teaches that air and ground headquarters at both army group-tactical air command level and numbered army-numbered air force level, be physically located in close proximity to foster close co-operation. It visualizes also that the two commanders meet frequently and agree on planned operations which will best accomplish the *joint* mission.

Air Force plans for operation envisage the establishment, at numbered air force-army level, of a tactical control group. This group will operate sundry installations for assigning missions to and controlling the in-flight operations of the various combat elements of the numbered air force. Heading up these installations is the joint operations center. Here are assembled staff representatives of both the ground and air commanders, with the air operations officer in charge. This staff section renders decisions on specific missions and plans and orders their execution. The plans and policies of the air and ground commanders are followed in determining specific missions to be executed. The air operations officer, advised by the ground operations staff representatives, renders the final decision.

A second installation, the tactical air control center, receives orders from the joint operations center, passes them to the specified combat unit (if not already so passed by the joint operations center) and assumes control of the unit's planes when airborne. This control is passed successively to tactical air direction centers and finally to tactical air control parties as the planes move closer to the front lines.

Tactical air control parties are representatives of the tactical control group, operating with army divisions and subordinate elements. They direct aircraft to specific targets. While they operate with ground units, they do not normally receive and forward requests for air support. However, once aircraft are dispatched on general missions, such as providing column cover for a ground unit, the ground unit may request attacks against specific targets and the tactical air control party will direct the attack.

Air Support Requests

The normal channel set up for handling air support requests is somewhat more complicated. For example, an infantry battalion forwards its request to its regi-

*Only recently, and after the above was written, there have been indications that the Air Force may be changing its attitude toward use of the B-45 in a close ground support role. In one recent exercise, the F-84 was used in close support.—The Author.

mental headquarters. Regiment, in turn, passes the request to its division. At division level, there is a ground officer in the G-3 section, known as G-3 Air, who receives, co-ordinates, and forwards requests to numbered army. At army, the request is received by the ground staff representative at the joint operations center. If favorably considered from a ground standpoint, the request is referred to the air operations officer for decision. If approved, a mission is set up and executed as described in the discussion on the tactical control group. Ground liaison officers on duty with combat wings, operating under control of the ground staff representatives at the joint operations center, brief the air unit on the current ground situation. In addition, they interrogate returning air crews and pass pertinent information back to ground units via the joint operations center.

Of further interest, from an operational standpoint, is the manner in which the Air Force divides into three phases, tasks, or priorities, its efforts to assist surface units in taking and holding enemy territory. Phase one is the gaining of air superiority. Phase two is the isolation or interdiction of the battle area. Phase three is the destruction of enemy forces within the battle area. The distinction is one of mission type and not necessarily one of chronology. Two or all three phases may be conducted concurrently, but, in general, emphasis is to be placed on the tasks in priority as indicated by the numbers. Here again, it will be noted, arises the same difficulty in defining a clear line of demarcation between general and close support as was discussed previously.

It is of passing interest to note that the present Air Force concept of operations is modelled largely upon the operations of the Ninth Tactical Air Force, the 12th Army Group, and their respective subordinate headquarters in Europe in World War II. In this connection, one might pause to reflect on the words of an outstanding air commander of the period, Lieutenant General E. R. Quesada:

> The final victory is, in itself, sufficient evidence that our tenets of Tactical Air Power were superior to those of our adversaries. This is not to imply or to be construed that our principles were infallible. If the enemy's scheme of employment had been as decisive as ours, serious defects in our own doctrine might have been readily evident. It is exceedingly difficult to analyze objectively mistakes committed by the victor. On the other hand, errors by the vanquished are easily seen when exposed to a thorough examination.

The matter now remaining for consideration is that of the type airplane with which the Air Force proposes to fulfill its close support mission. It has been noted that the one combat group presently devoted to close support training is now equipped with the jet B-45. The interception role of those remaining groups with the dual mission of air defense and close support has dictated the development of jet type aircraft for those units. This is not to say that all such groups are so equipped, or that they will be so equipped in the near future. Many aircraft of World War II design are still on hand and would undoubtedly be used if war were to come tomorrow. But this does not alter the fact that the Air Force has turned to the exclusive development of jet type aircraft for the future. It is logical, therefore, to assume that the Air Force proposes to use that type aircraft in fulfilling its support mission.

Air Force Proposals

These, then, are the salient features of the Air Force proposals for furnishing close air support to ground units in the conduct of land warfare:

1. Airborne weapons will remain under the command and control of air commanders.

2. Employment of airborne weapons in the furtherance of ground combat will be determined by mutual agreement between co-equal commanders.

3. Ground unit commanders below numbered army level will forward requests for air support to army-numbered air force; control of airborne weapons will be centralized at that level.

4. Final determination as to whether a request by a lower unit for air support will be favorably considered at numbered air force-army level will normally be made by an air operations officer in a joint operations center.

5. Close air support missions will probably be flown by jet type aircraft.

Now, consideration having been given to the Army requirements for close air support, and to the Air Force proposals for meeting those requirements, there remains only the task of comparing the two to determine whether they are in consonance.

Army Requirements vs. AF Proposals

General Devers recently released his final report upon his retirement after 40 years of service. This report was based on his wide and varied experience, including service as an army group commander in Europe during World War II and as Commanding General, Army Field Forces. Among his recommendations was one urging:

> Continuing joint study to simplify techniques and procedures in the air support of ground forces and to resolve problems of command relationships in the delivery of such support.

The report further urged increased joint training. However, since these present reflections are intended to deal primarily with wartime air support, this matter will be dropped from further discussion. This leaves one additional item for consideration in comparing Army requirements and Air Force proposals: The advisability of using jet aircraft for close support missions.

Of the three principal debatable issues, command, procedures, and aircraft, perhaps the first is the knottiest, since it involves personal prerogatives and service pride. It would be well, therefore, to examine it first before proceeding with the others.

Command

The case for the Army may be simply stated. The Army is responsible for the conduct of land warfare; its mission involves seizing and holding ground and the destruction or neutralization of enemy armed forces; its commanders are charged with responsibility for executing that mission within prescribed land areas; those commanders require the application of fire power at the right time, in the right place, and in the right quantity to assure success with the minimum expenditure of men, materials, and time.

The Air Force proposes that the employment of airborne weapons in the furtherance of ground combat will be determined by mutual agreement between co-equal commanders.

The Air Force may well point with justifiable pride to the accomplishments of its tactical air arm in Europe. It has been recorded that:

> The co-operation in the theater was excellent at all levels. . . . Daily conferences were held. The Air Commander was familiar with the ground situation and the ground commanders knew the air's capabilities. Together they decided what was best for the "team."

But is co-operation enough? Will there always be agreement? And will the mission suffer if agreement is lacking?

An Air Force officer, writing in an Air Force publication of recent vintage, apparently feels that co-operation leaves something to be desired. He wrote:

> The principle of *co-operation* implies a voluntary combining of various efforts toward a common goal, and is too loose to be relied upon in war. Co-operation leaves entirely too much to chance and depends to a large extent upon personalities. . . . Numerous examples could be cited to illustrate the fallacy of depending upon co-operation to achieve unity of effort. They would show that military operations are too important to be left to chance. Operations in-

volving surface, sub-surface, and aerial action require more than co-operation; they require mandatory co-ordination of effort.

It is interesting to note the Air Force concept of command requirements for air defense when ground antiaircraft artillery assists the Air Force in accomplishing its mission of protecting the United States against hostile air attack. Here the stark, imperative necessity for the air controller to have operational control over the artillery is emphasized and re-emphasized. It would appear that the Air Forces believe there is merit in unified control of air and ground components at the operating as well as at the planning level when air is being supported by ground.

Perhaps a measure of objectivity could be cast upon the issue if one reverts once more to a study of other weapons. Under normal circumstances, an artillery commander employs and controls his weapons. His co-ordinated fire power is directed toward achieving the objective of the unit which he supports. His unit is normally attached to the supported unit when both are beyond the effective immediate control of their common commander. He then functions in the dual capacity of artillery commander and technical advisor to the supported unit commander. In his capacity as technical advisor, it is his duty to recommend the manner in which his weapons can be most effectively employed. However, since the responsibility for gaining the objective rests with the supported unit commander, the authority to decide how weapons will be employed rests there also. It is only reasonable, at least from the ground commander's viewpoint, that the command principle applying to one weapon apply to another.

Aside from the negative aspects of co-equal command, there is a further, positive weakness in such relationship. This is reflected in the comments of the Commanding General, III US Corps, following his operations in the European Theater:

When planes are allotted to a ground force unit for close support, unless the commander of that unit controls selection of targets the air attack may not only lose its effectiveness but may actually be detrimental to the plans of the ground force commander.

Of course, target selection is rather more properly an operational than a command matter. Under existing doctrine, close support target selection is determined by the supported ground commander. So-called interdiction phase target selection is determined by the air commander. In theory, both result from mutual agreement between co-equal commanders. In actual practice in the past, it has been noted that such agreement was uniformly attained. It is to be further noted that an interdiction mission which is general support from the viewpoint of an infantry regimental commander may be, in effect, close support from the standpoint of the numbered army commander. Thus, a destroyed bridge may delay an army commander in reaching his objective. There may be only an academic difference between the authority to order that a bridge be left intact and the privilege of requesting agreement to such a proposal. There is little doubt as to which is more desirable from a commander's viewpoint.

It may appear that the line of reasoning to this point overlooks the fact that a tactical air command or force has obligations other than simply those of close ground support. Advocates of co-equal relationship advance the reminder that air superiority must be attained and maintained. They stress the importance of their second task, interdiction of the battle area. They contend that only through centralized control by air officers can the flexibility required by these obligations be attained. They hold that air commanders subordinated to ground commanders cannot effectively achieve that flexibility. That is tantamount to a dual charge that ground commanders lack mental flexibility and a

proper concept of the air weapon's employment.

Even a cursory examination of ground operations in Europe in World War II will reveal that divisions and corps were shifted within and between armies numberless times to permit their most effective use as conditions changed. Even armies were shifted between army groups on at least one occasion. And ground units are relatively immobile when compared with air units. This would indicate that facts do not bear out a mental inflexibility contention.

Do ground commanders lack a proper concept of the air weapon's employment? Would tactical air flexibility thus be impaired were air commanders to be subordinated to ground commanders? If so, then co-equal command advocates might well have a point. Under the same conditions, artillerymen and armored unit commanders might well make the same point. It might be added that the experts or specialists in artillery and armor have succeeded fairly well in indoctrinating most commanders on the capabilities and limitations of those weapons. Perhaps a similar indoctrination on the capabilities and limitations of the tactical air weapon would produce equally desirable results.

The application of unity of command as here suggested does not include those air elements concerned with waging the strategic war. Nor does it minimize the necessity for the timely application of tactical air power in the maintenance of air superiority. However, if the past is any valid indication of the future, the role of tactical air in gaining air superiority would be relatively minor when compared to that of strategic air operating against the same enemy. It has been recorded that, "From D+15 onward, Allied air superiority was so great that the *Luftwaffe* was not a serious threat to Allied military operations." The same report credited this superiority, in the main, to strategic air operations. It is doubtful that any soldier, from private to general, would long debate a recommendation by an air staff officer that enemy airplanes be denied the freedom of the skies. If nothing else terminated the debate, an enemy bomb would.

Unity of command is a widely recognized military organizational principle. It is supported in the concept of one commander for a theater of operations. It is given further impetus in the commonly accepted appointment of one task force commander for the accomplishment of a specific mission. It is accepted within the Air Force, the Army, and the Navy. It is applied by the Air Force itself in the contention that the ground elements of antiaircraft artillery should be placed under the operational control of the local air commander charged with air defense. Does it not seem rather strange that it should not be applied in the case of air weapons supporting ground commanders primarily responsible for seizing and holding land areas?

Operational Procedures

Important as sound command relationships may be, in the last analysis they exist only to ensure a smoothly functioning, efficient air-ground team. They are a means to an end. Closely related, and of perhaps equal or greater effect on the accomplishment of the ground mission, are the operational procedures established for ground units to secure air support.

Here again, the Army's case is founded on the principle of fire power applied at the right time, in the right place, and in the right quantities to assure success with the minimum expenditure of men, materials, and time.

The Air Force answer contemplates that ground unit commanders below numbered army level will forward requests to army; that control of airborne weapons will be

centralized at numbered army-air force level; that final determination as to whether a request by a lower unit for air support will be favorably considered will normally be made by an air operations officer in a joint operations center. In the case of preplanned air strikes, it is contemplated that army and air force commanders meet frequently with staffs of both and mutually decide on general and specific operations for furthering the over-all mission.

It has been recognized that, with a rapidly advancing army, especially when the advance is spearheaded by armored units, preplanned air strikes are virtually impossible. In a defensive situation, where the initiative rests with the enemy, it is equally difficult to formulate detailed plans for specific strikes. In any offensive action, the exploitation of local successes dictates that local commanders call for and receive fire support expeditiously.

The need for immediately available fire support has been met within the Army by the inclusion of artillery and armor in the organic composition of the division. It has been met further by an arrangement of artillery fire direction centers which can, within a very few minutes after a request is made by a unit as small as an infantry company, bring to bear the fire power of all the artillery in a corps, or at least as much of it as can reach the target. It is incongruous that the highly vaunted superior flexibility of airborne weapons cannot be exploited as well or better.

Whether or not a system of direct support groups similar in nature and operation to that used by the artillery would work better is a moot question. Certainly, it would meet the Air Force criteria of centralized control. And it should provide a simpler and faster means whereby a division commander could receive available support. Some will say that a system suitable for one weapon is not necessarily suitable for another. However true that may be, it is no reason, in itself, for tossing the system out without further examination. The clarion call for simplification of techniques and procedures which General Devers has sounded should not be ignored.

One could make much ado about whether final decisions in a joint operations center should be made by an air officer or a ground officer. Actually, if there be a joint operations center or any other installation to accomplish a similar task, one of its functions must be to achieve a fine balance between ground requirements and air capabilities and limitations. The existing situation must dictate which is given preferential consideration. It would be rather fruitless to argue the point, since the measure of the individual holding the position has ultimate bearing on the success or failure of the system.

Type of Planes

The remaining item which has aroused considerable debate is that of the jet type airplane with which the Air Force proposes to furnish air support to ground troops. The salient factors affecting fire power are speed, altitude, and range. These elements influence the availability and accuracy of fire power. The speed for best range of a jet propelled airplane is about 30 percent greater than that of the same airplane powered with conventional engine and propellers. Flight at approximately 30,000 feet altitude is required to get maximum range with a turbo-jet powered airplane. Flying a jet airplane at sea level will reduce its range to about one-half the maximum range obtainable at optimum altitudes. This means that high speed, high altitude tactics, requiring extensive training must be practiced if maximum accuracy is to be achieved without loss of range. Conversely, it means that range must be sacrificed if slower speeds and lower altitudes are to be em-

ployed. The Air Force points out that a plane incapable of the jet's high speed would be extremely vulnerable to enemy jet aircraft. The element of economy renders impracticable the concurrent employment of slow ground support planes and jet fighters to protect them. The Army's case, founded on the same fire power requirement as before indicated, remains unchanged.

In this particular dilemma, the Army's position is that of a customer not essentially concerned over the product offered for sale as long as it will accomplish the job. The onus of ensuring that the product will meet customer requirements rests squarely on the shoulders of the Air Force. Air Force tactical jet bombing to date reveals some rather decided inaccuracies.

This was clearly indicated, for example, at the dress rehearsal for the present Air Indoctrination Course at Eglin Air Force Base on 7 October 1949. In a series of demonstrations with B-45 jet bombers and F-84 jet fighters, both bombs and rockets fell far wide of the designated targets. Since these were demonstrations, they were manifestly representative of the existing Air Force capability. Opinion may vary on the cause. Some may blame the aircraft; some may blame the tactics; some may blame the state of pilot training. The significant truth is self-evident. The Air Force must develop adequate tactics and provide suitable training to match the airplane. If this is impracticable, then they must use an airplane for which they can train pilots and develop tactics. In view of the recent assurances made by the Air Force to Generals Bradley and Devers, the customer's policy must be one of watchful waiting.

Conclusions

Are the organizational concepts, the operational plans, and the matériel developments of the United States Air Force in consonance with the United States Army's requirements for close air support? If not, where are they at variance? What has comparison revealed?

Viewed in terms of the mission and the weapon, there would appear to be no justification for exempting tactical air weapons from the military organizational principle of Unity of Command. The concept of air power as a separate, co-equal entity is dangerously fallacious when applied to tactical air operations designed to further a land campaign. There is no effective substitute for command. There would appear to be no essential function of tactical air power which would be adversely affected by attachment of air units to ground commands, provided air unit commanders function effectively as staff advisors and ground unit commanders are properly indoctrinated. There is ample precedent to indicate that such is feasible.

The existing complicated system for processing ground unit requests for air support fails to meet ground force requirements for speed and simplicity in securing fire support. It fails to exploit fully the inherent flexibility of air weapons. Studies to bring about increased speed and simplicity should be continued. The possibility of employing a system of direct support units, a modification of the artillery system, should be given fuller consideration.

The responsibility for producing a balanced combination of airplane, tactics, and trained pilot for the delivery of airborne fire power promptly and accurately rests squarely on the shoulders of the Air Force. There may be many reasons for failure, but there can be no excuse. Existing inaccuracies in the delivery of fire power by tactical jet aircraft must be overcome. How they will be overcome is the responsibility of the Air Force. One cannot reasonably hold dogmatically to a thesis that jet aircraft are unsuitable

for close air support of ground operations. There can be little argument, however, with the thesis that tactics and training must be tailored to the weapon. It is inconceivable that the Air Force will not effectively discharge its responsibility for producing the necessary balanced combination.

In today's world, the United States cannot afford to be second rate in any arm or combination of arms. The maintenance of an effective air-ground team is today one of the most pressing tasks of the National Military Establishment. The time for action in welding that team is now; tomorrow may be too late.

Tactical air support has become especially crucial to land operations of the Army. For today no army can operate effectively in the field until tactical air operations are coupled with the maneuver of infantry and tanks on the ground.

Secretary of Defense Louis Johnson

June 1950

We must have a tactical air force, for every soldier knows that the fighter-bomber combination with the infantry, artillery, and tanks, is the only practical battlefield force in modern war.

General Omar Bradley

Continental Advance Section

A Blueprint for an Integrated Logistical Headquarters

Major Arthur E. Conn, *Quartermaster Corps*
Instructor, Command and General Staff College

MUCH has been written on the strategic and tactical aspects of the co-ordination required by two or more allies in the conduct of war. Unfortunately, little information is available on the logistical implications of such combined operations. Based on our commitments as a member of the North Atlantic Pact, these logistical implications give rise to problems that must be considered by our planners.

A distinguished French soldier, General Rene Bertrand, Commandant of the *Ecole Superieure de Guerre*, on a recent visit to the Command and General Staff College commented that greater study must be given to the logistical problems that would arise should the signatories of the North Atlantic Pact be forced again to defend themselves. These studies should, in part, lead to complete familiarity with the logistical procedures and techniques of all interested nations.

Here, then, is a brief account of an integrated logistical headquarters on the advance section level that operated successfully in World War II. It demonstrates the logical progression from a relationship built first upon close liaison with a comparable logistical headquarters of an ally to that of complete integration with that allied headquarters.

Coastal Base Section

Planned for as early as January 1944, the Coastal Base Section actually came into being in Naples, Italy, in early July of the same year. Initially, it provided a headquarters where plans were devised and perfected for the logistical support of all ground forces, both United States and French, who were to take part in Operation *Dragoon*, the invasion of Southern France. During this planning phase, one or more officers from each of the supply services of the Coastal Base Section were attached to the comparable sections of the United States Seventh Army in order to be fully acquainted with the requirements and plans of that Army, with a view to taking over base supply operations at the earliest possible time after the landings in France.

It was during this planning phase that the first integration with French logistical forces took place. French Army "B," which originally was to participate in the Southern France landings as part of the United States Seventh Army, and which

In the record of Continental Advance Section in World War II, military planners have an example of how the logistical staffs of two allies can be integrated to solve the complex problems of combined operations

later became a separate army under the 6th Army Group, provided for 238,000 persons. While American supplies were to be given to the French combat units, a French base section called Base 901 was organized along American lines and given, under American direction, the responsibility for getting these supplies to the French combat units. To implement this guidance by American forces, an "SOP, French-United States Elements of CBS," was published by the Coastal Base Section on 4 August 1944. In part, this standard operating procedure stated:

* * * * *

I. COMMAND

1. All elements of Base 901 will operate under the full command of the Commanding General, CBS.

2. Commanding General, Base 901, is designated as Deputy Commanding General, CBS, for French.

3. The Chief of Staff, Base 901, is designated as Deputy Chief of Staff, CBS, for French.

* * * * *

III. SERVICES

1. The heads of the various service sections, CBS, will serve as the heads of their respective services for French as well as for U.S. operations.

2. The heads of the corresponding services, Base 901, are designated as deputy heads for French of their corresponding services, CBS.

3. In so far as proves practicable, the general policy will be to have U.S. troops handle supplies for U.S. forces and French troops handle supplies for French forces; however, it must be recognized that the sole mission of the combined base is to support combat operations regardless of nationality. In carrying out this mission, heads of services are authorized to use all troops of the base wherever necessary regardless of nationality.

* * * * *

This standard operating procedure paved the way toward the concept of complete integration which did not occur until October 1944.

Operations in Southern France proceeded even better than was expected. Members of the Coastal Base Section general and special staffs and of Base 901 (Fr) were attached to the three combat engineer regiments which, after supporting the three combat divisions of United States Seventh Army and elements of French Army "B" in the initial landings, developed the beaches to receive supplies and personnel arriving thereon. Other personnel of the Coastal Base Section, including members of Base 901 (Fr) went ashore with the general and special staff sections of Headquarters, Seventh Army. In this way, complete familiarity with both the operations and plans of the United States Seventh Army was maintained and Allied logistical support was provided beginning with the initial landings in Southern France. On 9 September 1944, when the Seventh Army relinquished control of the beaches and the supplies located thereon, all the Coastal Base Section personnel and Base 901 (Fr) had arrived in Marseilles and were prepared to assume their logistical responsibilities in the support of the combat forces.

Continental Advance Section

Because of the rapid advance of the armies and their distance from supporting installations, higher authority directed the formation of a Base Section and an Advance Section. The Coastal Base Section, which on 12 September 1944 had been redesignated the Continental Base Section, once more had its official name changed to the Continental Advance Section. At the same time, the Delta Base Section was activated. Selected units and personnel on the troop list and manning table of the Continental Advance Section were reassigned to the Delta Base Section. Base 901 (Fr), displacing forward with Continental

Advance Section, likewise left behind headquarters personnel and troop units to co-ordinate with the newly activated Delta Base Section in pushing supplies forward. On 27 October 1944, General Order 27, Headquarters, Continental Advance Section, was published which formed the basis for all French-American relationships in the Continental Advance Section area—relationships which were of inestimable assistance in the successful prosecution of the war effort. This general order stated in part:

* * * * *

1. The following general orders, Headquarters, First French Army, is published for the information of all concerned:

23 October 1944

LETTER OF APPOINTMENT

The Commanding General, Continental Advance Section, U.S. Army, having assumed direct responsibility for the supply of the First French Army, will have authority to decide, so far as he will deem it expedient, on the assignment of French Officers of Base 901, whom he will appoint to the various branches, headquarters or command group of the Continental Advance Section.

These provisions will apply as long as the First French Army is fighting as part of the U.S. 6th Army Group and on the French soil; they may be reconsidered on the other side of the Rhine River.

signed: J. de LATTRE
Commanding General, First French Army
C. P. Besancon, 23rd October 1944

2. For operational purposes only, the Headquarters of the Continental Advance Section will, effective 20 October 1944, be composed of American and French officers and enlisted personnel closely integrated within the General and Special Staff Sections. Authority for necessary attachment of French personnel is contained in communication quoted above. American and French officers will assume equal status as to authority and responsibility in the discharge of all duties appropriate to their respective staff assignments.

3. * * * * *

Such officers of 901 Base (French) as may be required to assist in the logistical support of the First Army (French) and for supply of French service troops employed by Continental Advance Section, will be placed on detached service with Continental Advance Section by the Commanding General, 901 Base (French).

* * * * *

In addition, General Order 27, stated in part that:

1. The mission of the Continental Advance Section included the close support of the Seventh (U.S.) Army, First (French) Army and other forces under the command of the 6th Army Group; such other troops located forward of the rear boundary of the Advance Section, as may be assigned for supply.

2. In the discharge of his responsibility, the Commanding General, Continental Advance Section, would be assisted by a General and Special Staff composed of both French and American personnel.

Operations

The above general order delineated what was to be done. However, it was only through intelligent, co-operative action that this order really became effective. While operating as the Coastal Base Section in Naples, and the Continental Base Section in Marseilles, co-ordination and co-operation with French service elements had been achieved by close liaison with Base 901 (Fr). With the issuance of General Order 27, the French became an integral part of the Continental Advance Section operating personnel from the headquarters staff to the service units, and French officers were assigned to position vacancies in accordance with their respective ranks. As appropriate to an officer's rank or as-

signed position, that officer commanded those troops available for his mission, whether American or French.

A French Command Group was formed within Headquarters, Continental Advance Section, to co-ordinate the operations of French personnel in all staff sections. In addition, its mission was to collect pertinent information concerning the French First Army's operations from all available sources, to advise the appropriate sections of the Continental Advance Section on French supply problems, as well as to counsel on action taken for the supply of the French First Army. It was this French Command Group which assisted the French First Army in complying with the supply procedures of the United States Army. In the same way, it was this group consulting with the Continental Advance Section staff which pointed out that the French Army had its own directives with which it had to comply and that a compromise, at times, must be made. A French Deputy Commander and a French Deputy Chief of Staff were appointed. Each of the general and special staff sections had French personnel assigned to it, and all officers, whether French or American, were equally responsible for the supply of the two great armies of the 6th Army Group, the First French and the Seventh United States. By April 1945, there were 39 French officers in the headquarters of the Continental Advance Section and 34 French units comprising over 6,500 men assigned to Base 901 (Fr) and available for use in the Continental Advance Section area.

Even though complete integration of French personnel with the Continental Advance Section for combined logistical operations had taken place, Base 901 (Fr) continued in existence. Its continued existence was necessary, first, as an administrative headquarters for matters purely French, such as G-1 problems; second, to purchase for and supply the entire French First Army with such items of supply as could be procured from local sources in France; and third, to supply some 50,000 FFI (French Forces of the Interior) members who had been recruited on the drive north through France by the French First Army. These men were not on the *Dragoon* Troop List, and according to agreements already made could not be supplied from American sources.

In providing logistical support to the French First Army, many and varied problems had to be solved. The army which was to help liberate France had been recruited almost exclusively in North Africa. It contained a considerable number of French Colonials, including North Africans, Senegalese, and Madagascans, as well as French nationals from Algeria and from all over the world who had gone to North Africa to join the forces of liberation. Under a Franco-American agreement, these units were to be given American equipment and furnished certain American supplies. As time permitted, they were to be trained by American technicians in the use of such equipment.

Results

Let us examine some of the tangible, practical results of the integration. Essential to effective resupply was a knowledge of American requisitioning and supply procedures. By means of the integrated staff, the task of interpreting United States Army policies and techniques so that the supply sections of the French First Army were able to fit into French supply procedures, was made easier. Many of the French officers assigned to the Continental Advance Section had served with the *Corps Expeditionaire Francaise*, a unit of the United States Fifth Army in Italy. Because of their experience in dealing with American forces, they were able to assist materially in resolving any problems which arose.

French engineer staff officers were of

tremendous help in facilitating the work of the Engineer Section, Continental Advance Section. Not only did they work on supply problems, but they also provided information on local engineering resources, especially building material. They also provided liaison with the *Service aux Ponts et Chaussées* (Service of Roads and Bridges), greatly facilitating and accelerating the repair of lines of communication in the rear of the 6th Army Group. Furthermore, French engineer units under Continental Advance Section direction repaired some 300 miles of road in the line of supply of the 6th Army Group, cleared bridges over the Saone River, and de-mined some 50 miles of road.

French signal staff officers brought a knowledge of the French telephone and telegraph system to the Continental Advance Section which was of immense aid to American signal men. To get the best possible results, all construction and repair facilities were pooled. However, it became necessary, because of language difficulties, to establish two telephone and telegraph exchanges in order to get the best possible service.

The assistance provided by French quartermaster staff officers was of great help in solving problems peculiar to that service. Through their aid, facilities were provided at Vesoul where, under an American commander, French and American quartermaster mobile salvage repair units worked side by side on matériel received from both the United States and French Armies. Again, their knowledge of the Class I requirements of French Colonial troops made it possible to arrange for the shipment of only certain items of our ration and thereby avoid the wastage or backhaul that would have ensued had the standard American ration been forwarded.

Late in 1944 when the Continental Advance Section created a Transport and Movement Section, it placed at its head a French colonel completely familiar with the French railroad and highway system. He and his associates in this section contributed their knowledge of local conditions which was helpful in developing the use of the local rail and road net, capacities, off loading sites, and other facilities which aided the movement of supplies in and out of depots.

On the general staff level, the French officers integrated into the Continental Advance Section headquarters played their part in ensuring the successful accomplishment of the Continental Advance Section mission. As part of the G-3 staff, they established contact with French regional authorities to obtain necessary rifle ranges and training grounds so that the training of American units could proceed as desired. They also played a part in the organization for the defense of the Continental Advance Section area in December 1944, when a withdrawal of the 6th Army Group or a German breakthrough were considered possibilities. They promulgated an order for French service units which set up three oversized French battalions for defense. These battalions were included in the plan worked out by the American command which was to be used for the defense of the Continental Advance Section area. The main work, however, of the French representatives in the Continental Advance Section G-3 Section was the organization of the surveillance and the guarding of critical points. Arrangements for these guards were made with French Military Regions in which the Continental Advance Section area was located, thereby relieving American personnel for other necessary duties.

The mission of the French personnel in the G-2 Section of Continental Advance Section differed in comparison with other sections in that it was not primarily directed toward contact with French First Army. These French officers were responsible for establishing efficient

co-operation between the French counter-intelligence services and their American counterparts whose objective was to protect communication lines and depots.

Among the many important by-products of this integration were the opening of the Franco-American Institute and better relationships with the French press. As regards the Institute, instructors and lecturers were furnished, in the main, from Continental Advance Section personnel, augmented by local dignitaries. Admission was free, and subjects taught included French and American history, literature, and language. The value of the Institute, aside from the academic benefits derived, may be difficult to calculate for there is still no accurate measure for determining good will and better understanding between peoples. This much is known—after 5 years of German occupation and being bombarded by German propaganda, the crowded forums and classes of the Institute did much to dispel and correct any misconceptions about Americans that might have arisen in the minds of the French. At the same time, American personnel were given an opportunity to study and observe and thus develop a better understanding of the French and their great nation.

Lessons

What lessons can be learned from the successes achieved by this integrated logistical headquarters?

First, that an integrated headquarters whose mission is to provide logistical support for forces composed of the nationals of two countries can be formed.

Second, that properly organized and directed, an integrated logistical headquarters can function smoothly and harmoniously in the successful prosecution of the war effort.

Third, that the responsibility delegated to the officers in an integrated logistical headquarters will depend on their ability to accomplish their assigned tasks, regardless of nationality.

Fourth, that this integration of the personnel of two allies must be extended to include the technical staff sections of the headquarters, and not stop at the general staff level.

Fifth, that the leaders selected to direct the activities of such an integrated logistical headquarters must be imbued with the effectiveness of such headquarters, and that they must be able to motivate their staffs with the feeling that all efforts must be directed toward the accomplishment of the over-all objective, the successful prosecution of the war effort.

Sixth, that a mutual understanding of supply procedures and techniques as practiced both by American forces and our Allies must be fostered. This promotes better understanding and more harmonious relationships, which aid in overcoming many of the problems which arise in the day-to-day operations of such a headquarters.

Conclusions

What conclusions can we, as the members of the military profession, draw from the unique development of Headquarters, Continental Advance Section? There are several.

First, just as we are now convinced as to the necessity for Logistical Commands to provide the personnel and units who will be responsible for the logistical support of combat forces, so must we broaden our horizon to be able to include within those commands elements of the logistical staffs of our potential allies, should that need arise.

Second, it should be considered necessary that our supply, requisitioning, and maintenance procedures and techniques be understood by the military staffs of our potential allies, and that we become more familiar with their procedures and techniques in the same fields. This is espe-

cially true, since there is every evidence that we shall, for some time, continue as the "Arsenal of Democracy." It is only in this way that rapid integration of logistical headquarters can be effectively consummated.

Third, from the over-all picture of the experiences encountered and the problems solved by the integrated logistical staff of the Continental Advance Section, and based on the assumption that integrated combat headquarters will be formed to direct operations in any future conflict, it is believed that the present signatories to the North Atlantic Pact must maintain an integrated logistical staff in being. One of the functions of such a staff should be advance planning directed toward solving the complex logistical problems that will arise in a combined operation. It is further believed that this integrated logistical staff must be made up, in part, of civilian economists representing each of the interested nations, who will advise on the economic feasibility of all proposals set forth by the military members of such staffs.

Fourth, the history of the successful integration of the logistical staff of two Allies in World War II and the methods used to overcome their problems should be studied by the military and civilian planners not only in the United States but also in the councils of our allies. Here, indeed, is the blueprint of a dual-nation logistical headquarters which history has recorded as operating successfully, promoting mutual understanding based on mutual responsibility.

It is only through a sound, effective integration of our military and other national policies that we can maintain the posture necessary to keep peace in the world. If, by our strength, we can discourage aggression long enough; and if, during that uneasy period, we can throw our entire weight and idealism into the effort to develop an effective organization for world peace, we may approach the goal that man has sought so long: unarmed settlement of differences between nations.

Former Secretary of the Army Gordon Gray

We will not seek unilateral security by world domination or by preventive conquest of a nation that we might fear is preparing to attack us. Those two courses are repugnant to our way of life. Concern and measures for our own defense, however, offer no threat to another nation and violate none of our own traditions. In its essence, our security program must be defensive. Security provisions, however, must aim at the increase of offensive capacity, for offense is still the most effective defense once conflict begins.

General of the Army Dwight D. Eisenhower

A Design for a Mobilization Training Program

Colonel Wesley W. Yale, *Cavalry*
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The views and opinions expressed in this article are the author's; they do not necessarily correspond to those of the Department of the Army or the Command and General Staff College.—The Editor.

THE designing of an effective mobilization training program is one of the most interesting, challenging, and important projects which faces today's training planners. This is not to intimate that there is no such program nor to suggest that current plans are not effective. But it may be pertinent to determine whether we are making the most of the lessons which we learned at such great cost in World War II, and whether, in the light of the demands of the future, we cannot design a vehicle which will carry more efficiently the loads which another Pearl Harbor may thrust upon our shoulders.

Perhaps most officers today are content to accept the training programs currently offered without question. Few examine the principles which form the basis of a training program. Few test the validity of a program which assigns, let us say, twice the number of hours to "character guidance" as are given to combat tactics. Yet such allotments of time are proposed. Will they stand up against an enemy whose chief characteristic is ruggedness in the field and whose morals are confined within rather narrow limits?

Approaching the Problem

To understand the principles which form the basis of mobilization training and what is needed to implement the principles, let us approach the problem on the following basis:

1. By an examination of the deficiencies of the World War II programs as determined by Army Ground Forces (AGF).
2. By an analysis of the probable demands of future war as they relate to training.
3. By evolving a list of principles, based on past, present, and future requirements, upon which a training program may be designed.
4. By suggesting a program which will follow these principles.

Obstacles and Deficiencies

Army Ground Forces, the forerunner of the present-day Office, Chief, Army Field Forces (OCAFF), engineered the vast training task which transformed cadres and fillers into combat-worthy divisions and which produced as well the host of technical specialists who served them indirectly in World War II. The history of training makes fascinating reading. It is compiled in a volume published by the Historical Division, Department of the Army, entitled *U.S. Army in World War II, Army Ground Forces. The Procurement and Training of Ground Combat Troops.* Objectively written, it forms a veritable mine

of information for today's planners who are faced with the fact that next time there will be little or no room for experimentation. Mobilization training, like a parachute, must work the first time.

While training suffered at the outset from lack of adequate equipment, and while training camps were often chosen for reasons other than their suitability for conducting field training, the greatest obstacle to effective training during the years 1940-1945 proved to be the instability of the personnel situation. The crux of the problem was stated by General Marshall in his book, *War Reports of General Marshall* (Lippincott, 1947): "Until 1943, urgent demands of crises in various parts of the world forced us to organize special units and ship them abroad without the desired degree of preparation."

By initially shipping troops whose training could not be completed, a vicious cycle was begun. It is acknowledged that inexperienced and inadequately trained troops suffer greater casualties than do units which have better capabilities. Whatever the cause, the losses of the early campaigns were such as to require further deletions from troops undergoing training in the Zone of the Interior. The "deletions," due to interrupted training, themselves became likely casualties.

Replacement training centers, until late in the War, proved incapable of supplying the numbers of men required by unforeseen losses and by new developments. Both the centers and the divisions in training, by losing men in the midst of a given training phase, were compelled to institute training for several groups of individuals, all of whom were in different stages of advancement. For divisions in training, this meant setting back the date on which they could be pronounced ready for combat by a matter of months.

There were other causes of personnel shifts. Officer Candidate Schools, the Army Specialized Training Program (ASTP), and the special personnel requirements of the Air Forces were among the factors which added up to serious deletions from the ground combat units, all in addition to the demands occasioned by losses and special developments in the theaters.

The results in some divisions were spectacular. The 65th Division did not go overseas until 1945, and it had the benefit of 4 years of AGF training experience. But because of personnel troubles which were beyond the control of AGF, the Division went overseas without ever having trained its regiments with their supporting battalions of artillery in field exercises. The division commander had never maneuvered the command as a unit and, in fact, the division had never been together except for reviews and demonstrations. Its composition had changed greatly from one assembly to another. At the time of reaching the port of embarkation, about one man out of every four had served less than 3 months with his unit.

"Mobilization training, like a parachute, must work the first time." In a future war, the urgency for trained soldiers may be so great that the training program must be reduced to the absolute essentials

By the end of 1943, 24,541 enlisted men had been withdrawn from 14 infantry divisions for transfer. Between April and September 1944, 17 divisions lost 78,703 enlisted men. Officer transfers paralleled those of the men. The effect on the over-all team training of the Army was incalculable.

"Team training" was a theme which was to receive heavy emphasis in word if not in deed. The early actions in the theaters

showed plainly that the individual soldier had not been sufficiently conditioned to the realities of the battlefield. In addition, squad and platoon actions revealed that the small unit phase of the training program had not been given adequate treatment. Although every effort was made to correct this condition, such as the conduct of schools in tactical training immediately behind the lines by Major General Terry Allen's First Division, as well as by many others, the continuing personnel shifts in the Zone of the Interior prevented AGF from realizing the fruits of a campaign to stress small unit training and realism.

It is not surprising that team training suffered, considering the personnel turnovers which were dictated by circumstances and which were beyond the control of any headquarters. Whether a unit was in training in the Zone of the Interior or whether it was in battle, losses and withdrawals would have prevented effective team practice regardless of other factors. But the most distressing factor was the use of replacements who had to be sent into combat without having completed their individual training, who could not adapt themselves readily to the teamwork demanded of them, and who, in fact, did not have at their disposal skills which might have permitted them to escape early inclusion in casualty lists.

To sum up, then, the deficiencies of the World War II training programs were acknowledged to have been centered in:

1. Lack of emphasis on small unit training.
2. Failure to stress combat realism.
3. Use of replacements before completion of individual training.

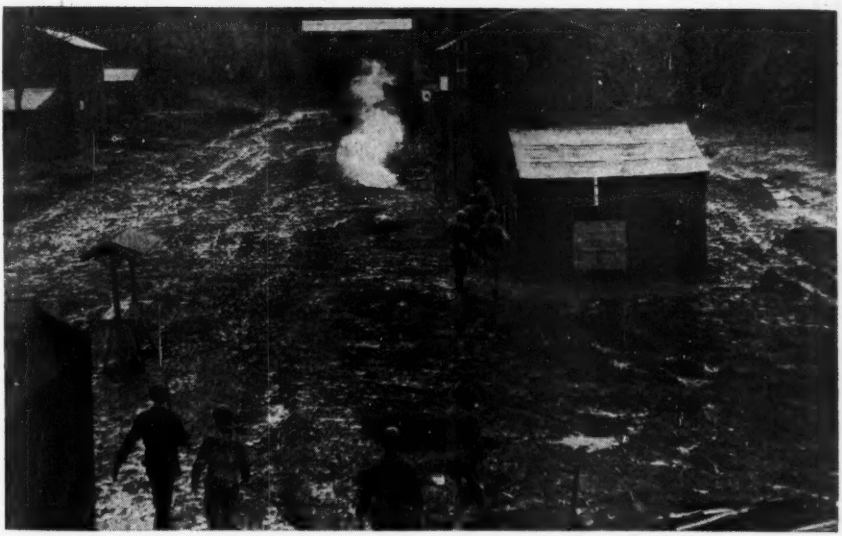
It is evident that, in planning a training program for the future, planners must be especially zealous in providing for the elimination of these faults.

Training For a Future Emergency

In spite of the tremendous strides which have been made in staff planning since the outbreak of World War II, conditions exist today which are disturbingly parallel to those which obtained at that time. Considering only the matter of personnel requirements, it is difficult to see how, in a period of dispute as to the relative importance of the Air Force, the Navy, and the Army, manpower allotments to each service can be made a part of planning and be at all valid when a future emergency develops. Again, if World War II produced unforeseen demands in the theaters, what may be said for a situation which admits of a possibility of an attack on the United States itself, either by long-range weapons of mass destruction or by actual airborne invasion calculated to seize critical production centers? Regardless of plans to employ striking forces against enemy troops at a distance, will not the real or fancied threat of invasion serve to divert forces from strategic missions because of the demands of threatened localities?

We must remember that our national mobilization concepts do not visualize the overnight appearance of a trained army. Conditions require us to mobilize divisions in accordance with a prepared schedule. We shall begin with a few divisions in being and a few in training. We shall progress to more in being and more in training. But we still face the problem of World War II: When something unforeseen occurs to the divisions in being, there is only one recourse, the training of replacements in centers. If the centers are inadequate for the emergency, the men must be taken from divisions in training, and we begin again the vicious cycle of 1942. Worse still, if the emergency calls for a new type of unit, we must go directly to the divisions in training and we must employ them partially trained.

There are suggestions for alleviating this situation which are beyond the scope of this article. We might perhaps create a vast number of replacement training



These pictures indicate some of the training exercises in the US Army during World War II. Above, a problem in town fighting in a specially constructed village. Below, an instructor guides troops through an uphill attack exercise. Both scenes were taken at the Jungle Training Center in Hawaii in 1943.—US Army photos.

centers and activate immediately a large number of divisions, provided that proper equipment existed to do so, and provided that the troops could be transported to the point of combat. But even assuming that this can be done, it is obvious that a period of 3 or 4 months must elapse while individuals are being trained. In this period, there must be no unforeseen emergencies such as occurred in 1942-1943 or we shall again witness the sacrifice of brave but inept soldiers to a rugged and ruthless foe.

There are other factors. What is needed to insure the integrity of Western Europe? Shall Communism be contained in Asia? What may be the extent of combat in the Arctic? These questions are posed, not because it is claimed they cannot be answered, but to advance the view that manpower requirements for future war are such that precise allocations are difficult to plan. When events do not transpire as predicted, shifts in allocations are inevitable.

The solution is obvious. We should accept the possibility, or probability, that personnel shifts will again act to disrupt whatever training program is undertaken. To do this simply means that we should conduct our training in the shortest time possible, particularly the training of the individual.

There is nothing new in this concept. Rapid training has always been advanced as a prime American need. Yet this discussion has been undertaken in order to indicate that the urgency may be greater than we think. The individual training phase of the World War II program required 644 hours and was featured as much by its interruption as by its completion. Can we count on having this time available should war begin in the near future?

At present, the accent is upon urgency. President Truman has stated that, in the event of war, the United States will not have an extended time in which to prepare. The implications of mass-destruction weapons are apparent to everybody. Training Memorandum No. 1, OCAFF, dated 9 August 1949, calls attention to the need for minimizing training time and for confining training to the barest essentials. So there is no disagreement in establishing the matter of urgency.

The problem of program design, then, resolves itself into a determination of the following:

1. What essential subjects shall be included?
2. What time shall be allotted to each to assure reasonable mastery?
3. The sequence in which the subject shall be presented.

Principles of Program Design

Consideration of the deficiencies of the World War II programs and of the estimated needs of the future leads to the evaluation of the principles by which a new program may be designed. A study of the tabulated programs in the accompanying table will assist in evaluating principles as they are developed.

The table shows, item by item, the basic individual phase of the World War II Mobilization Training Program (MTP) 7-1 (Infantry). Other columns afford a comparison between MTP 7-1 and other programs which have been put into effect or which have been suggested since the War. These need not be identified, except by number.

It is not proposed to find fault with any or all of these programs. The idea is simply one of determining whether, as concrete cases, they meet the needs of tomorrow as evidenced by principles considered to be sound. Once principles are established, the suitability of any current or proposed program can easily be tested.

There are two significant facts connected with these programs which are not readily apparent in a glance at the tables. The first is the trend towards shorter pro-

grams. In point of total hours for basic individual training, the programs compare as follows:

MTP 7-1	644 hours
Program 1 (in effect)	560 hours
Program 2 (in effect)	511 hours
Program 3	384 hours
Program 4 (proposed)	300 hours

The second fact is the need for grouping the various subjects to be taught into three classes: (a) Orientation and indoctrination subjects; (b) Disciplinary instruction; and (c) Combat skills. This grouping is followed in the tabular comparison of programs in the table.

We have already seen that the probable urgency attending another mobilization will require a minimized training program. Training Memorandum No. 1, Office, Chief, Army Field Forces, dated 9 August 1949, flatly states:

"Because time is all important during mobilization training, requirements *must be reduced to absolute essentials* and training methods rid of all lost motion." "Each subject, reduced to the elements necessary for combat, must be mastered; polish and versatility are developed later."

We may easily define an "essential" as a subject which cannot be dispensed with

Comparison of Programs.

	WW 2	No. 1	No. 2	No. 3	No. 4
ORIENTATION AND INDOCTRINATION, TOTAL	16	25	48	30	12
Achievements and Traditions of the Army	.....	.....	(6)	.....	.....
Character Guidance	.....	.....	(5)	(7)	.....
Citizenship	.....	(2)	.....	.....	.....
Commander's Orientation	.....	(1)	(1)	(1)	(1)
Personal Adjustment	.....	.....	(2)	.....	.....
National Defense Establishment	.....	.....	(2)	.....	.....
Troop Information Program	.....	(14)	(16)	(12)	.....
Organization of the Army	(2)	(2)	(2)	(2)	.....
Orientation Course—"Why We Fight"	(7)	.....	.....	.....	(9)
Personal Affairs	(2)	.....	.....	.....	.....
Customs and Courtesy	(4)	(6)	(10)	(6)	(1)
Military Justice	(1)	.....	(4)	(2)	(1)
COMBAT SKILLS—PHYSICAL TNG AND MARCHES, TOTAL	76	98	89	46	50
Physical Training	(40)	(70)	(55)	(30)	(30)
Marches, Bivouacs and Tent Pitching	(36)	(28)	(34)	(16)	(20)
COMBAT SKILLS—WEAPONS, TOTAL	234	154	126	117	106
Qualification	(96)	(96)	(80)	(61)	(60)
Familiarization	(138)	(58)	(46)	(12)	(46)
BAR	/38/	.....	.....	.....	/3/
MG Light	.....	.....	/24/	(20)	/4/
57-mm Rifle	.....	.....	.....	.....	.....
75-mm Rifle	.....	.....	.....	.....	/2/
60-mm Mortar	.....	.....	.....	.....	/1/
Demonstration	.....	/8/	/4/	.....	.....
Rocket Launcher, 2.36	.....	.....	.....	(8)	.....
Rocket Launcher, 3.5	.....	.....	.....	.....	/2/
M-1 Rifle (or primary arm) [1]	/68/	/50/	.....	.....	/30/ [1]
Carbine	/8/	.....	/10/	(8)	/2/
Bayonet	/16/	.....	.....	.....	.....
Grenades	/8/	.....	/8/	(8)	/2/
COMBAT SKILLS—TACTICS	148	58	16	24	64
Tactics, Individual	(44)	.....	.....	.....	.....
Combat Formations	.....	(4)	.....	.....	.....
Concealment and camouflage	.....	(4)	(5)	(4)	(4)
Cover and movement	.....	(4)	(6)	(4)	(6)
Hasty fortifications	.....	(4)	(5)	(4)	(4)
Tactics, Individ. (Contd)					
Night Vision	.....	(4)	.....	(4)	(1)
Patrolling dismounted	.....	(14)	.....	(4)	(8)
Scout observers and messengers	.....	(4)	.....	.....	(4)
Tactics of the squad	.....	.....	.....	.....	(8) [2]
Tactics of the Squad and Platoon	(74)	.....	.....	.....	.....
Extended Order Drill	(6)	.....	.....	.....	.....
Tactics of the Platoon	.....	.....	.....	.....	(29) [3]
Tactics of the Company	(16)	.....	.....	.....	.....
Tactics of the Battalion	(8)	.....	.....	.....	.....
Defense against Air and Armor	.....	.....	.....	(4)	.....
COMBAT SKILLS:—TACTICAL TESTS AND INSPECTIONS	40	39	.....	.....	8
COMBAT SKILLS:—					
GENERAL, TOTAL	56	49	32	48	13
Mines and Booby Traps	(8)	.....	.....	(8)	(2)
Chemical Warfare	(8)	(4)	(2)	(2)	(2)
Combat Intelligence	(6)	(4)	(2)	(4)	.....
Identification of Vehicles and Aircraft	(5)	.....	.....	.....	.....
Map and Aerial Photo Reading	(8)	(14)	(16)	(16)	.....
Medical Subjects	(17)	.....	.....	.....	.....
Military Sanitation	.....	(6)	.....	(2)	(1)
Venereal Disease	.....	(5)	(2)	.....	(2)
First Aid	.....	(8)	(8)	(8)	(4)
Personal Hygiene	.....	(2)	(2)	(2)	(2)
Personal Adjustment	.....	.....	.....	(2)	.....
Motor Movements	(4)	.....	.....	.....	.....
Signal Communications	.....	(6)	.....	(4)	.....
DISCIPLINARY TRAINING, TOTAL	26	88	124	68	25
Dismounted Drill and Ceremonies	(18)	(52)	(53)	(30)	(17)
Equipment, Clothing and Tent Pitching	(4)	.....	(4)	.....	.....
Interior Guard	(4)	(10)	(16)	(8)	(4)
Maintenance of Clothing, Equipment and Quarters	.....	(26)	(51)	(30)	(4) [4]
COMMANDER'S TIME	24	39	48	35	10
INSPECTIONS—NON-TACTICAL	20	26	24	16	8
CLASSIFICATION TEST	4	4	4	.....	4
TOTAL	644	560	511	384	300

NOTES

[1] Or man's primary arm (includes field firing).
[2] Combat drill 5 hours; field exercise 3 hours.
[3] Combat drill 15 hours; field exercise 14 hours.
[4] Includes showdown inspection.

without adversely affecting the capability of the trainee to become self-sufficient in combat. Not so easy is the task of determining which of the subjects listed in the table are in fact essential. For example, "combat skills" would appear at first glance to be necessary inclusions. Yet among the combat skills are subjects which many training experts will insist on subordinating to items of orientation (such as inculcation of the will to fight) or discipline (which will insure willingness to obey orders).

A glance at the AGF history of training, already mentioned, will be of value in appreciating the training problems which have a bearing on the future. For example, the individual training phase, after being originally set at 17 weeks, was reduced to 13 weeks with the realization that the personnel situation was causing men to enter combat before they could complete the longer program. However, observers in the theaters, and the commanders as well, soon recognized that the lack of small unit training was providing even more of a problem than inadequate individual training. A return to the 17-week cycle was therefore resorted to with the idea of supplying more unit instruction.

The replacement training centers, which supplied the bulk of replacements after 1942, had included a "unit" training in their programs. Yet there were no organized units in the centers. There was simply instruction in unit tactics by instructors who were members of center non-tactical organizations. The centers operated at all times with the mission of providing individual replacements.

The 17-week program, nevertheless, included certain training in the company echelon. Observers in the theaters felt that this was unnecessary and contributory to continuing deficiencies, concluding that the time might better be devoted to basic instruction. Accordingly, by May 1944, a preponderance of opinion had been built up for limiting tactical training to the squad and platoon.

Instruction was revised in the summer of 1944 in the light of combat experience. More individual training in the realities of combat was demanded. The major shift, however, was directed at the omission of certain orientation subjects, some of which had been stand-bys of many years of army training. Among these were:

Military Discipline
Articles of War
Equipment, Clothing, and Tent Pitching
Protection Against Carelessness
Information on Bond Allotments

Study of the "organization of the Army" was restricted to cover only units which might be observed by the soldier in daily life. Combat intelligence was likewise given a very limited range.

It is worthy of note that the AGF took a dim view of theoretical instruction in discipline, including supply discipline. Maintenance of equipment was dropped as a specific subject of study and was included in the list of items to be inspected. *"Discipline, it was decided, could not be implemented in the soldier in a 4 hours course: it was a pervasive requirement of action, beginning with the orientation talk of the commanding general and extending through all phases of training."*

Leaving the AGF story for the moment, let us consider the mental conditioning of the soldier. Orientation subjects are generally associated with the development of morale. They are tied in with the increasing influence of psychiatrists (which kept pace in World War II with the shocking figures of separations from the service due to nervous disorders) and highlight the need for proper mental conditioning. Yet the soldier is not trained, presumably, until after such time as he has had a proper physical examination, including inquiry into his mental capacities. Therefore, the matter of what produces morale while in the service is the real question. Perhaps

the best insight into it is afforded by the following tabular results of a poll conducted among returning soldiers by the Department of the Army and published in July 1945 in the *War Department Digest No. 15*, "What the Soldier Thinks."

Things Which Tend to Make Morale

Teamwork, pride in outfit	30%
Good officer-enlisted man relations	20%
Friendliness among enlisted men	14%
Physical comfort (food, housing, etc.)	11%
Rest, entertainment	10%
Belief in mission	2%
Keeping busy	2%
Miscellaneous	11%

This table is of great significance to training planners. The first three items, and possibly the first four, will usually be present in a unit which has good leadership and which has been welded into a real "team," whether it be a fighting team or one which has earned its good name by supplying or servicing combat troops. For assault troops, it means that the lack of small unit training and the personnel shifts which impeded the development of tactical teams were responsible to a great extent for morale problems. As a corollary, the subjects frequently associated with morale, such as belief in mission, entertainment, comfort, and the like were actually inadequate substitutes for the leadership which created crack outfits.

It is obvious that leadership in lower units, and the officer-enlisted man association which goes with it, is developed in large measure by practical control, such as in combat drills and field exercises. Thus, a program designed to make up the deficiencies of small unit training in World War II may be expected to a degree to permit reduction in hours devoted to what have hitherto been considered as morale subjects.

Let us recall that the personnel shifts of the last War were primarily responsible for the interruption of training and for the entry into combat of men who were so inadequately trained that they became early casualties, thus introducing a further demand for replacements. We have seen that conditions in the next war, while possibly foreseeably better due to better staff training, may well be similar in point of personnel crises. It is not safe to plan on having an extended period in which to train.

Our first concern is therefore for the individual—to insure that in the event of a crisis demanding his premature entry into combat, he will have received sufficient training to enable him to maintain himself. The goal of the basic individual phase of mobilization training is therefore the production of a soldier who is capable of sustaining himself in combat and who, with further training, is capable of being assimilated into the lowest team echelon of the unit to which he is assigned.

The matter of advanced individual training is beyond the scope of this article. It requires separate study to determine whether the recruit should progress through a replacement training center for the attainment of specialized skills such as gunnery or radio repair. Or, whether he should take this training within a unit, or, given basic training, whether he could be sent to a combat unit as a replacement with the expectation that the unit could find the opportunity to give him specialized team training short of actual combat.

In all cases but the last, additional training time is considered to be available. If the time is available, then the urgency as to careful selection of essentials and as to the precise allotment of time to insure mastery of essentials is not so great. The important problem is the creation of the self-sufficient soldier.

If this is our goal, what principles can be deduced from the foregoing data on which a suitable training program for the basic individual phase can be designed?

First, it is evident that in principle the program must be minimized.

Second, the program must be reduced to essentials.

Third, combat skills must be mastered. Indoctrination and disciplinary subjects must be scrutinized in the light of their direct bearing upon combat skills.

Fourth, a properly balanced program must emphasize small unit training and stress combat realism.

Fifth, a concept of operations beyond those of the squad and platoon is not necessary for the individual.

Sixth, subjects concerning maintenance and supply discipline should be made primarily matters of "command demand" rather than instructional items: standards required are indicated through inspection while sub-standard units are made to improve themselves during off-duty time.

A Suggested Program

Let us consider Program No. 4 in the table. It represents a drastic reduction in time compared to that of other programs. Its 300 hours may be said to fully meet the requirement that the program be minimized. But is it comprehensive, does it consist only of essentials, and is sufficient time allotted for the mastery of essentials?

In the field of orientation, Program No. 4 confines instruction to a commander's orientation of 1 hour, 9 hours mental conditioning in "Why We Fight," and 1 hour each to courtesy and justice. Many items appearing on other programs are eliminated as unessential, though desirable. Troop information, for example, is capable of dissemination on bulletin boards, as are local regulations. Unit leadership must solve personal relation problems. While it may be argued that leadership, in the early days of mobilization, will not be of a sufficiently high order to orient soldiers correctly, it is also debatable whether the material can be inculcated by any other means.

The short 300-hour program does not contemplate the abandonment of the troop information program, but limits it to combat indoctrination in the basic individual phase of training, leaving the bulk of instruction for later phases. Other programs accent troop information and indoctrination.

Disciplinary instruction is necessary to the degree of producing an alert soldier who is proud of his command and his membership therein and who is conscious of the need for giving proper maintenance to the equipment issued to him. In military training, just as in the training of an athletic team, a fair amount of "pep drills" are required to impart snap and precision which in turn produces a sense of unit solidarity. Ceremonies, too, are valuable to this end. But marching, and precision drills involving marching, are capable of being taught throughout the program, incident to moving to and from points of instruction or assembly. Special allotment of hours is wasteful when measured against the "essential" criteria and, in fact, is usually resented by the soldier. The 17 hours of close order drill and ceremonies provided by Program No. 4 appear to be more than adequate for the purpose.

The subject of supply discipline has been given a great deal of attention since World War II, and properly so. Misuse and even abandonment of valuable equipment during the War was by no means uncommon. However, it is questionable whether *instruction* in the care of this equipment will be as effective as the establishment and maintenance of standards by means of frequent inspection. In 1944, AGF reduced the hours of instruction in care of equipment to a minimum, holding, as quoted above, that supply discipline was a matter of command demand. Substandard units, it was inferred, should not be permitted to utilize program time to

attain proficiency but, rather, should prepare in off-duty hours for a subsequent inspection to determine their progress. It is felt that the increasing tendency to devote 30 or more hours of instruction to supply discipline, as indicated in Program No. 3, for example, ignores the lessons learned during World War II. The 4 hours allotted in Program No. 4 are deemed sufficient to *demonstrate* maintenance methods and proper standards.

The first three programs in the table show a considerably greater time spent on weapons instruction than does Program No. 4. This is due to the concept of precision firing at bulls-eye targets and at relatively long ranges. Such a concept does not meet the needs of modern war. New weapons will in all probability make precision firing inappropriate, but even before their advent it would appear time to take a realistic approach to the matter of marksmanship. The rifleman, for example, is not in reality required to hit another rifleman at 500 yards but merely to deliver a volume of fire with sufficient accuracy to nullify the firing capabilities of enemy gunners, so that his fellow-soldiers may maneuver. It is felt by many that the precision firing courses of the past have been responsible for the failure of the individual to deliver fire into an area, as evidenced by Colonel S. L. A. Marshall's authoritative volume, *Men Against Fire*. New standards should not only remedy this defect but operate to reduce materially the time spent in training the individual to master his weapon.

Program No. 4 attempts to correct the major deficiency of World War II programs in regard to small unit training. It is curious that other programs developed since the War have failed to consider the problem. Perhaps team training has been left out of these programs in the belief that team training is not necessary to the training of the individual. However, this idea is not correct.

We have noted that the goal of the program is that of creating a self-sufficient soldier. While it is generally admitted that the tactics of the individual is an essential subject, such as the use of cover and concealment, it does not seem to be realized that even a well-trained individual will become an early casualty if he is not given some concept of what the unit does in the field. To take only one example, if he is to avoid enemy shell fire, he must be drilled in the means employed by his squad or platoon leader to obtain the proper reaction from the men.

Unit training does two things for the individual. It gives him an appreciation of the reasons why he must master the various subjects of individual training and it drills him in mass reaction to enemy fire and to friendly fires co-ordinated with maneuver. Both have an important and direct bearing upon his ability to be self-sufficient in the event he is required to enter combat before completing advanced individual or unit training.

The small unit tactical training visualized by Program No. 4 consists principally of combat drills similar to those listed in Field Manual 22-5 *Leadership, Courtesy and Drill*, but amplified to a degree to permit an appreciation of the objective and to illustrate the effect of both hostile and friendly fires. An idea of combat formations is expressed in the drills now prescribed.

Program No. 4 has been presented as one which meets the needs of future mobilization. While of primary value for infantry, it is usable by all branches with or without modification. It is brief, it considers essential the combat skills in which the programs of the last War were deficient, it strips to the minimum the indoctrination and disciplinary material which has a direct bearing on combat, leaving for later phases material which is desirable but less essential. It is felt

that it will produce a self-sufficient soldier in the event of an emergency, one who, with further training, could take his place in any combat element which requires team activity. In contrast, Program No. 3, its closest counterpart in point of time, emphasizes orientation material beyond the point essential for combat and, even while eliminating the unit instruction shown to be essential from the lessons of World War II, accents the supply discipline items dropped by AGF in 1944.

Summary

This article has attempted to bring out the conflicting considerations which are involved in designing a program which will train the individual soldier for the next emergency. It is hoped that the great urgency for a minimized training cycle has been made apparent, and that by the exposition of the groupings for an adequate solution which are now taking place, the reader who is interested in training will realize the vast field which is open before him. It has not been possible to present all angles of the problem. However, if all accept the dictum of the OCAFF to reduce to combat essentials, our future should be reasonably secure. Certainly, we have no time for what AGF defined in 1944 as "frills." What they ruthlessly eliminated then must not find its way into our concept of tomorrow.

The value of the trained man as compared to the untrained man is as undeniable in the military field as in the field of medicine, law, science, or industry. This need of trained manpower, if the country is to have a strong defense establishment, was as manifest to Washington, Jefferson, and Jackson in former times as to Pershing, Marshall, and Eisenhower in our own times.

Former Secretary of War Robert P. Patterson

As our wartime experience fades into the past, maneuver training takes on added significance. Time brings new tactics, new weapons, new strategy which must be mastered by new personnel. There is a vital and continuing need for an accentuated maneuver program. In it lies the only answer to the vital question, "Is the Army fit to fight?"

General Mark W. Clark

AN AIRBORNE PRIMER

Lieutenant Colonel Wilbur M. Griffith, *Field Artillery*
Instructor, Command and General Staff College

Introduction

TACTICAL envelopment by means of air transportation was one of the major new techniques developed and battle tested during World War II. Starting with the employment of a parachute infantry battalion, it reached its peak in the planned, but not executed, Operation *Arena*.

This operation, presented to General Eisenhower for his consideration in March 1945, contemplated an airborne operation involving 10 divisions. Six airborne and four infantry divisions were to be landed on the eastern boundary of the Ruhr, about 100 miles inside enemy lines. Simultaneously with this landing, strong armored forces would strike to join the airhead, thus encircling the Ruhr in one rapid operation. The operation was not ordered executed principally because sufficient units were not immediately available. However, if this operation is a prophecy of things to come, airborne operations can no longer be the province of a few "airborne experts."

All officers in the United States Army must be familiar with airborne units and airborne operations. It is to shed some light on these subjects that this "primer" is written.

Historical Background

The concept of vertical envelopment is not new. Among Benjamin Franklin's writings we find this statement: "Where is the Prince who can so afford to cover his country with troops for its defense, that ten thousand men descending from the clouds might not in many places, do an infinite deal of mischief before a force could be brought together to repel them?"

Coming down through the years, the next recorded proponent of the vertical envelopment was Major General Billy Mitchell. Lieutenant General Brereton records in his diary that in October 1918, General Mitchell recommended to General Pershing that a division of parachutists be dropped from bombers to attack Metz from the rear. He further states that the idea was persuasive to General Pershing who directed that planning proceed for such an operation but that the Armistice a month later cut short these plans. From then until the early 1930s, little development took place.

By 1931, the Russian, British, and American Armies had successfully transported small units by air and, by 1936, both the Russian and the British Armies had employed small parachute forces in

Airborne divisions are essentially infantry divisions with the ability to close with the enemy from the air. Their missions are limited only by the range of aircraft and by the imagination of military planners

field maneuvers. On 12 March 1938, strong German forces were air-landed in Vienna and on 7 October 1938, a complete German infantry regiment was moved into Silesia in transport-type aircraft. These operations gave evidence that combat groups could be successfully landed in enemy territory and were capable of performing specific missions such as sabotage, reconnaissance to obtain vital information, and the seizure and holding of key terrain.

These developments caused the subject of organization and training of airborne forces to be given serious consideration in the United States. On 6 May 1939, the Chief of Infantry suggested that the War Department General Staff give immediate attention to the organization of airborne forces. The initiation of a staff study led to considerable discussion as to what military agency should control the proposed development program. The Chief of Infantry insisted that airplanes were but means of transportation and that the primary mission of such airborne troops, after landing, was to fight as infantry soldiers. On 2 January 1940, these contentions were sustained when the War Department directed the Chief of Infantry to conduct a preliminary study and to prepare and submit a general plan for the new airborne development project.

There followed the typical difficulties in arriving at acceptable concepts of organization, equipment, and tactical usage of this new type of weapon. The early history of the United States airborne effort is, in effect, a compilation of facts and data relating to the efforts, accomplishments, and problems of those who envisioned, concurrent with the development and expansion of air power, the possibilities of utilizing air transportation to project an offensive striking force.

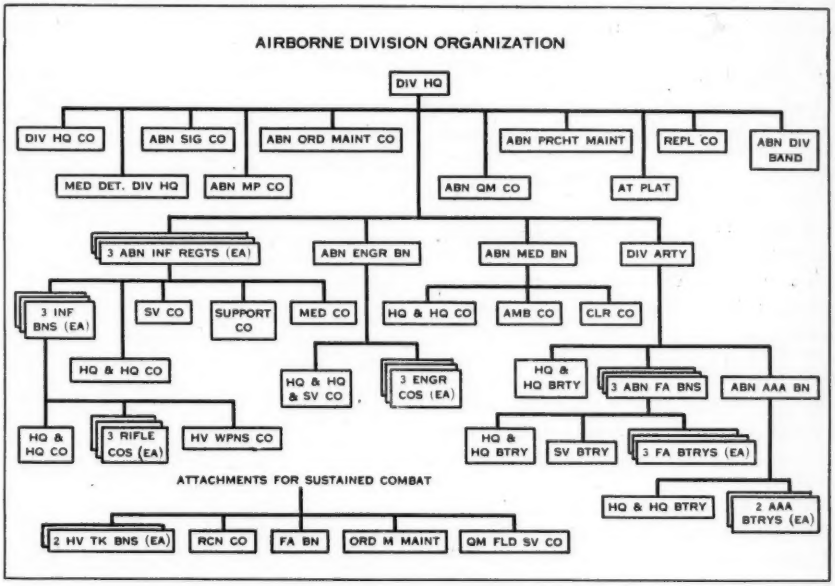
While the initial studies and tests were being conducted in the United States, some additional indication of the role that airborne forces might be required to play in the war in Europe were demonstrated by the German invasion of Holland in May 1940. The Germans here employed parachutists to capture and secure key bridges to facilitate the advance of friendly armored forces. In the battles to destroy the Belgian fortresses, immediately after the Holland invasion, the Germans again employed parachutists in a direct assault role. The seizure of an area in support of, or in conjunction with, other military operations was thus conclusively illustrated.

In May 1941, the Germans struck at Crete and employed, for the first time, airborne forces en masse in a combined land, sea, and air operation. The German air forces, after obtaining aerial supremacy, isolated the island, while gliderborne and parachute troops stormed key installations. In these operations, the ability of gliderborne troops to effect tactical landings and to bring in heavy weapons and transportation to permit sustained action in destroying organized resistance was conclusively shown.

As a result of these successful airborne operations, United States planners concluded that strong airborne forces, comprised of parachute, glider, and air-landed elements, could be profitably employed. In July 1941, the War Department directed the Army Air Forces to develop new cargo aircraft for airborne combat teams which were to consist of all arms and services. The War Department then completed the activation of experimental units by addition of a test glider battalion. A parachute test unit had been activated as early as June 1940.

By 10 March 1942, a training program was initiated to emphasize the employment of a parachute-glider air-landing team in the assault of key installations. There followed rapidly a program of activations which resulted, prior to the invasion of Europe in June 1944, in the existence of a United States airborne force of five airborne divisions, six separate regiments,

adequate troop carrier wings and groups, miscellaneous supporting troops of all types, and a separate command headquarters for airborne and for troop carrier forces. The War Department further directed that all standard ground force units would be given instruction in air transportability but, due to the necessary rapidity with which the United States forces were committed to active war theaters, only three infantry divisions and several small organizations completed the program. Since the War, however, the air transportability program has again been initiated, and at the present time one of the criteria in the development of new weapons and equipment for the Army is air transportability.



The Airborne Division

As originally conceived, the airborne division was a small unit about one-half the size of a standard infantry division, to be used only for special operations. Because of the limitation on weight imposed by the cargo-carrying capacity of aircraft, the division was, of necessity, lightly armed and equipped. It was therefore able to sustain itself in combat for only a few days, after which it would be withdrawn, re-equipped, and made ready for other operations.

The withdrawing of airborne units upon termination of the airborne phase did not work out in actual practice. Lack of replacement units, and an opportune withdrawal time which would not disrupt the operation during its early phase, were almost insurmountable obstacles. As time went on, it became apparent that the organization of the airborne division as well as its equipment had to be changed in order to enable the division to accomplish the missions given it by theater commanders. With each employment of the airborne division, additional attachments

were made with the result that an airborne division became comparable in strength and equipment to the standard infantry division.

In light of war experience, the airborne division was reorganized in 1947 on the following concept:

"1. That Airborne Units will be strategic units, to be employed by Commanders on the Army Group level, or higher.

"2. That airborne troops will not normally be employed on missions which can be performed more expeditiously and economically by other forces, such as infantry and armored divisions.

"3. That the airborne division will be comprised organically of those units which can be committed initially to accomplish the primary mission of air assault leaving only a minimum rear element to be brought forward by means other than air.

"4. That when employed, in conjunction with other ground forces, airborne troops will be relieved at the earliest practicable time the tactical situation will permit. They may, however, be employed in an independent operation deep behind enemy lines to seize and establish an airhead, with no intention of any support or reinforcement other than by air, and must be able to operate in this manner for an indefinite period.

"5. That when not relieved upon linkup with other forces, and maintained in the line due to its critical assignment and deployment, attachments will be made in order to give the airborne division comparable strength and fire power to a standard infantry division. Such units will be considered standard attachments of the division."

The airborne division as now constituted (see organization chart) is fundamentally an infantry division with one distinguishing characteristic—the ability to close with the enemy from the air. The division is composed of all essential ground arms necessary to accomplish the primary mission of assault by air and to maintain itself contingent upon air resupply. All units organic to the airborne division are trained for both parachute and glider operations, thus affording the maximum flexibility. Standard attachments are included in the organization to augment the division when it is engaged in sustained action. When so augmented, the division is capable of sustained action for a period of time commensurate with that of a standard infantry division.

Upon the assignment of a specific airborne mission, the airborne division is habitually organized into three echelons: the assault echelon, the following echelon, and the rear echelon. There are no hard and fast rules for the composition of any one echelon. The organization is tailored for each operation and depends upon the assigned mission, the number of aircraft available, the terrain in the objective area, and the strength and disposition of the enemy forces.

The assault echelon is composed of the parachute and glider elements which are used to seize the airhead. Depending upon the aircraft available, all elements of the assault echelon are normally landed on the same day. The assault echelon consists of the combat teams, the division reserve, and division troops.

The combat team organization for an airborne assault is more truly a task organization than the normal combat teams of the infantry division. In this connection, it resembles the combat command of an armored division in that it is given the units necessary to accomplish the particular mission assigned. There is no standard airborne combat team. However, the combat team will almost always include an infantry regiment and an artillery battalion to which will be added other units as dictated by the situation. Combat team formations should be terminated as soon as centralized control is established

and rarely will exist after the seizure of initial objectives.

Several factors influence the composition of the division reserve. The relatively large area of the airhead, the lack of command control upon landing, the initial vulnerability of airborne forces to a co-ordinated attack, particularly with armor, and the expected enemy resistance, all weigh heavily in the determination of the reserve. Since these factors will vary with each situation, no normal formation of the reserve can be stated; however, it will, in all cases, contain infantry and antitank units. Units designated as reserve will assemble in a central location for employment as division reserve.

Division troops consist of the command and control, and administrative elements necessary for centralized direction.

The follow-up echelon is that portion of the airborne division which is not initially brought into combat, but which, as soon as practicable, joins the assault echelon in the airhead. This echelon may move by air, sea, or overland, or a combination of these means. Depending upon the means of transportation used, the follow-up echelon will consist of additional vehicles and heavy equipment of units in the assault echelon, organic units of the division not employed in the assault, and standard attachments.

The rear echelon, as its name implies, is that portion of the division which is left at the base camp to perform administrative functions which cannot be effectively accomplished in the combat area. It usually consists of the parachute maintenance company and the administrative sections of the division, regiments, and separate battalions.

Types of Airborne Operations

There are two general types of operations—one in which a link-up with ground forces is made, and the independent airhead operation. The type of operation in which a link-up is contemplated may be a deep penetration such as that contemplated in Operation *Arena* or shallow penetratations as were those in Normandy and Holland. World War II history is replete with examples of this type of operation in which the mission assigned the airborne force was any one of the following:

1. To attack the enemy rear or lines of communications and thus assist a breakthrough by other ground forces (Germans in Holland and Belgium).

2. To seize and hold important tactical localities on the line of advance of the main force (Americans and British in Holland).

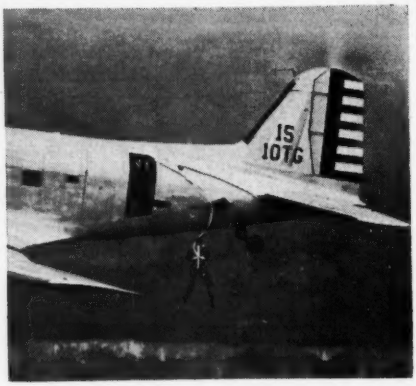
3. To delay and block enemy reserves during the establishment of a beachhead (Americans in Normandy).

4. To protect an initially exposed flank (British in Normandy).

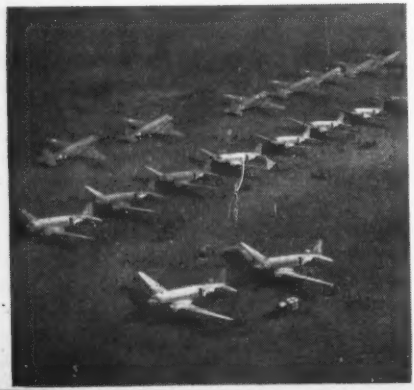
5. To delay the retreat of the enemy until friendly ground forces advance (Germans in Greece).

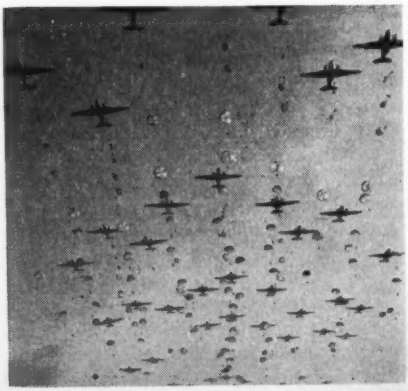
Unlike the operations described above, no doctrine or principles have been established as a result of experience for the independent airhead operation. It is a new concept. Military operations of this nature could be visualized for accomplishing three broad types of missions as follows:

1. To seize and secure a base which could be used as a refueling or rearming base in order to extend the range of strategic air strikes. With the significance attached to vital internal targets deep within the enemy homeland, the destruction of these targets will have an important bearing on the enemy's capacity and will to prosecute warfare. The potency of destructive weapons now available or being developed afford a means whereby the application of a comparatively small force against the enemy's internal vital targets may have a decided influence on his capacity for warfare. The lack of range of available aircraft or the lack of inter-

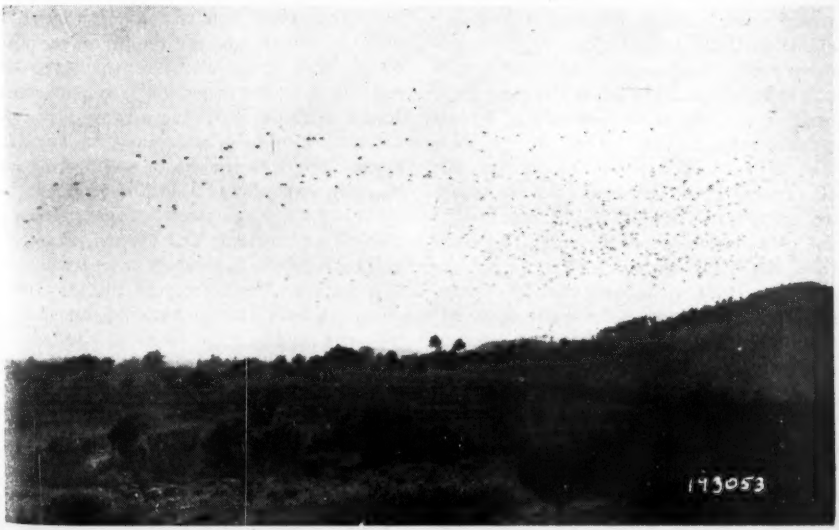


Airborne techniques received their battle tests in World War II. Above, left, the "air infantry" of the US 2d Division loads equipment at Fort Sam Houston in 1941. Above, right, a parachute jump at Fort Benning, also in 1941. Left, paratroopers of the 82d Airborne Division board a plane in England for the invasion of Holland, 17 September 1944. Below, left, another scene of US paratroopers loading into C-47 transport planes in England for the invasion of Holland. Below, right, paratroopers of the 82d Airborne Division in a mass practice jump over Sissonne, France, on 14 March 1945.—US Army photos.





Two air jumps in widely separated theaters in World War II are shown here. Above, Corregidor, Philippine Islands, a few minutes after the landing of the 503d Parachute Infantry Regiment on 16 February 1945. Below, paratroopers landing near La Motte, 15 August 1944, during the US Seventh Army invasion of Southern France.—US Army photos.



mediate bases may require, under certain circumstances, the establishment of a temporary airhead which can be used to extend the striking range of strategic air weapons. Such an operation could well be envisioned in the establishment of an airhead in an isolated area in order to utilize the shortest route to the objective area. The selection of an isolated area has a two-fold purpose. First, it would require fewer troops for local defense of the airhead; second; if well planned and promptly executed, decisive strikes could be delivered to the objective area before the enemy has time to react effectively in eliminating the airhead. It is visualized that such an airhead would remain in operation only a short period of time and that the troops could then be retrieved by a returning airlift.

2. To completely neutralize a vital enemy installation, such as an underground industrial complex, whose characteristics do not present a suitable target for air attack. The positive destruction of an enemy atomic plant or guided missile factory may have a decided effect on the enemy's war-making ability. It is possible that these installations may be underground, also considerably dispersed and camouflaged. If such is the case, their positive and complete destruction by air attacks may not be feasible, due to their lack of vulnerability or due to the lack of capability of the available air weapons. Such a situation might require the use of airborne troops in order to ensure that the vital target is completely destroyed. It is visualized that an operation of this nature will require considerable strength to overcome the defenses in the objective area. These operations would require considerable air support. However, the extent of the air support would vary inversely with the availability of landing fields in the airhead. It is reasonable to assume that the enemy would react quickly and effectively against an operation of this nature as the vital industrial target in this instance would in all probability be well defended. Although there is a possibility of removing the troops from the airhead upon completion of their mission, it may be necessary for the force to disperse. Units will withdraw overland, being resupplied by air as necessary. Then, in accordance with a prearranged plan, they will assemble in an area from which they can be removed. In this type of operation, the result accruing from the destruction of the objective must be balanced against the possible loss of the troops employed.

3. To establish an airhead from which major surface operations may be extended. As in large-scale amphibious operations, a major undertaking of this nature can only be accomplished after air superiority approaching air supremacy has been established. In addition, the aircraft requirements would necessitate the availability of large numbers of first-class transport aircraft. It is not unreasonable to expect that the bulk of the air industrial effort would have been devoted to developing fighters and bombers, as only by such means could we achieve the air advantage which is a prerequisite to this type of operation. Furthermore, considerable forces equipped with these same types of aircraft would be necessary to furnish close support to the major surface operations in expanding from the airhead. In other words, large numbers of transport, as well as strategic and tactical aircraft, will be required to conduct an operation of this nature. Therefore, the military student, in considering major independent airborne and air landings of this category, should be conservative in estimating the number of troops that could be delivered to the airhead simultaneously or within a comparatively short period of time. The airlift reasonably expected to be available would undoubtedly require considerable shuttle operations before an

airhead of major proportions could be established.

Summary

1. Airborne operations are here to stay. If World War II experience is valid, they will, in the event of another war, increase in size, intensity, and scope.

2. The airborne division is essentially an infantry division with one distinguishing characteristic—the ability to close with the enemy from the air. When the division is to be employed in sustained combat, standard attachments are made to give the airborne division strength, fire power, and mobility comparable to that of an infantry division.

3. Missions suitable for airborne units are limited only by the range of aircraft and the imagination of the planners. In general, airborne operations are of two types: penetration in which contact with other general forces is contemplated; and independent airhead operations.

In the plans for the defense of our nation, the Army has been assigned a major role that requires that we be ready at all times to move by the fastest means and with the greatest firepower and logistical support.

Therefore, we in the Army must place increasing emphasis upon transportation by air, and more of our personnel and equipment must be prepared to move by that means.

For I am convinced that if war ever comes again, airborne operations will play a far more vital part than ever before.

General J. Lawton Collins

The first point in a future airborne policy is that neither the operation of airborne forces nor supply by air on a serious scale will be practicable except in conditions of virtually complete air superiority.

Air Chief Marshal Sir John C. Slessor, Great Britain

Personnel Management in the Army and in Business

Lieutenant Colonel George I. Forsythe, *Infantry*
Instructor, Command and General Staff College

THE Personnel Management Program of the United States Army compares most favorably to the programs in use by several typical business organizations in America, although some of us are frequently too hasty in our criticism of the Army's personnel program. How often have you heard the statement that "Modern business organizations have personnel programs far more effective than those of the Army"? Statements like this are often made without a thorough understanding of the personnel problems and programs of either the Army or business.

To learn of the application of personnel management doctrine in successful business organizations and to search for policies and techniques which would improve the Army's personnel doctrine, the students assigned to the Department of Personnel at the Command and General Staff College study the programs of several nationally known industries each year. The students are organized into committees and spend 2 full days with a business firm, going over its program in detail. The results of these actual observations are analyzed by each student committee. A report on its findings is prepared. These reports are presented to all students in assembly and a discussion of the various approaches to the problems of personnel management is conducted.

In June 1949, the students of the Department of Personnel were organized into nine committees, each of which studied a nationally prominent business organization in Kansas City and vicinity. This article presents an analysis of the findings of these committees and a comparison of some of the major features of the various personnel programs.

Basic Differences

It is essential at the outset to make a general comparison between the Army and business. There are four basic differences which should be borne in mind and which affect the personnel management doctrine of the two types of organizations.

1. While the many types of business organizations have varying aims such as production, distribution, service, or construction, the primary aim of any business is to make profits. A business which operates consistently in the red cannot long survive. Thus, the effectiveness of a firm's operation can be measured in tangible terms: things produced, passengers carried, items sold, and dollars made. The mission of the Army, on the other hand, is somewhat different. Its primary aim is to assist in the prevention of war, which it might possibly do by its mere existence. But if war must come, its aim is to assist in winning that war at the minimum cost in lives and money. It is difficult, in time of peace, therefore, to measure the

efficiency or effectiveness of the Army in tangible terms. One cannot say that "during 1949, the Army produced a million tons of national security." The Army's effectiveness is apparent only by the continuation of peace and its preparedness to fight.

2. The "nomadic" aspects of military life make it considerably different from most civilian fields of endeavor. A good guess is that during a normal 30-year peacetime career a member of the Army, on the average, travels some 45,000 miles and moves and establishes his home approximately 17 times. This feature requires the Army to compensate for the lack of a normal settled homelife in a single community. Conversely, the opportunity to work, live, and establish a home in one place is a feature attendant to most civilian occupations.

Army personnel management policies and practices compare favorably with those of modern, progressive business organizations. Here is an analysis and comparison of some of these policies and techniques

3. The presence of collective bargaining in most civilian industry has a distinct effect on personnel management. Management normally discusses new policies and procedures, or changes thereto, with its labor organization prior to adoption. This is done to attain maximum unanimity of acceptance of the proposed action and to avoid violent disagreements. Likewise, a union often submits proposals to a company recommending the adoption of personnel management policies and procedures. Thus, labor and management both play important roles in the development of personnel doctrine of the firm. Army personnel doctrine cannot be developed bilaterally. The very nature of military service, with its inseparable requirements for leadership and discipline, make dual authority impractical. The leaders who formulate policy, however, must and do give careful consideration to troop attitude and troop reaction as well as to requirements for national security. Congress, too, has an important influence on Army personnel policy for that branch of the government provides the money and the authority for many personnel programs.

4. The Army's size, world-wide deployment and wide variety of tasks have a distinct influence on personnel policy. Even at its present reduced strength of around 600,000, the Army is more than twice the combined size of the firms studied. Not only must the Army's personnel doctrine be designed to consider the best interests of the individual and the needs of national security, but it must be capable of universal application in all types of units located all over the world. This requirement for universal and standardized application of personnel policy is not prevalent, to such a great extent, in civilian business firms.

Firms Studied

With these basic differences in mind, this study will show how the Army and business compare in their treatment of eight important aspects of personnel management. There are, of course, many additional features of a personnel management program which are highly important. Those presented here, however, were selected for comparison to give a general view of the basic personnel programs of the organizations observed during the survey.

For the purpose of this analysis, the firms studied are identified as follows:

Firms A, B, and C are nation-wide and local public utilities enterprises.

Chart 1
ORGANIZATION

	Personnel Function Handled by Straight-Line (No Staff Agency)	*Personnel Functions in a Sub-section of Principal Staff Agency*	*Personnel Functions Handled by Major Staff Agency*
THE ARMY			X
FIRMS			
A Utilities Group			X
B Utilities Group			X
C Utilities Group			X
D Manufacturing Group		X	
E Manufacturing Group		X	
F Manufacturing Group	X		
G Wholesale & Distribution Group			X
H Wholesale & Distribution Group			X
I Retail		X	

Chart 2
FACTORS GIVEN MAJOR CONSIDERATION FOR EMPLOYMENT

	Intelligence	*Good Health*	*Personality*	*Age*	*Experience*	*Formal Education*
THE ARMY	X	X	X	X		
FIRMS						
A Utilities Group	X	X	X	X		
B Utilities Group	X	X	X	X	X	
C Utilities Group	X	X	X	X	X	
D Manufacturing Group	X	X				
E Manufacturing Group	X	X	X	X	X	
F Manufacturing Group		X			X	
G Wholesale & Distribution Group	X	X	X		X	X
H Wholesale & Distribution Group	X			X	X	X
I Retail	X	X	X		X	X

Chart 3
MEANS USED TO MEASURE QUALIFICATIONS

	Inter-view	*Intelligence Tests*	*Aptitude Tests*	*Practical Demonstration*	*Physical Exam*	*Refer-ences*
THE ARMY	X	X	X		X	
FIRMS						
A Utilities Group	X		X	X	X	X
B Utilities Group	X		X	X	X	
C Utilities Group	X		X		X	
D Manufacturing Group	X		X			
E Manufacturing Group	X					X
F Manufacturing Group	X			X		X
G Wholesale & Distribution Group	X	X		X	X	
H Wholesale & Distribution Group	X	X	X			
I Retail	X		X			X

Firms D, E, and F are manufacturing firms (varying from heavy to light).

Firms G and H are wholesale distribution firms operating on a national scale.

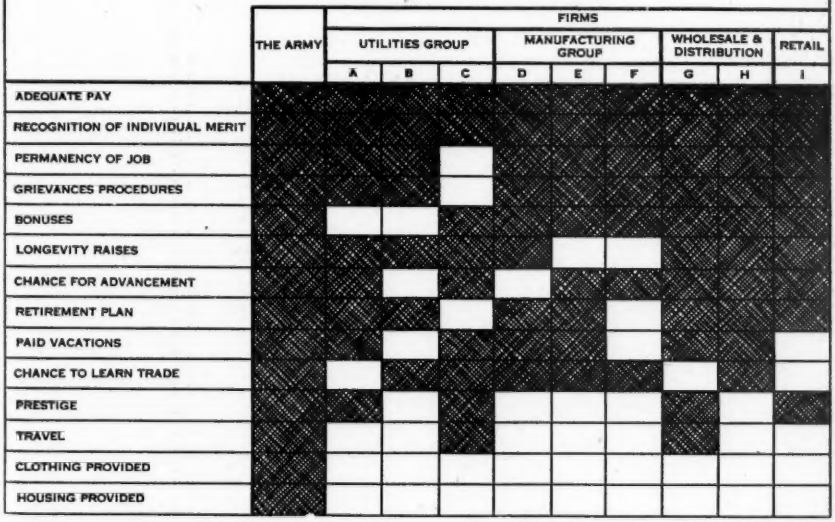
Firm I is a large retail firm which is a subsidiary of nation-wide retail organization.

Personnel Departments

Chart 1 deals with the position of the personnel department within the organizational structure of the firm. This comparison is made to indicate the importance accorded personnel functions in the various firms as evidenced by the proximity of the personnel director to the responsible head. In the Army, the personnel director is a principal adviser to the commander. In business, the personnel department was found generally in one of three places in a firm's organization, as a principal staff agency reporting directly to the president, as a subsection of a principal staff agency, or as having no staff status but, rather, being handled directly by managerial personnel from the top to the bottom. One of the conclusions which may be drawn from a study of this chart is that those organizations whose primary function is one of *service* (such as the Army, public utilities, wholesale and distribution) tend to place their personnel department in a principal staff position. Organizations whose primary functions are *production* and *sales* tend to place their personnel departments in a position subordinate to the operations and productions chiefs.

CHART 4

INCENTIVES STRESSED BY PERSONNEL MANAGEMENT



Recruiting

The various organizations studied seek to reach the sources of manpower generally through "walk-in" hiring or local recruiting programs to fill vacancies as they occur. Obviously, the intensity and the extent of a recruiting program is directly proportional to the size of the firm, the turnover rate, and the number of current

or predicted vacancies. The recruiting problem of all of the firms studied by no means approaches that of the Army; however, more than half of the firms find it necessary to conduct local recruiting drives to obtain personnel of the desired qualifications. Although the "selling points" used by these firms in their recruiting programs differ with the nature of the business, there are four points which, when stressed, produce good results. These points are:

Chance for advancement.

Recognition of individual merit.

Permanency of job.

"Interesting work" emphasized by those firms whose activities hold that appeal.

"High wages," normally thought of as singly the most important "selling point," have been found by most of the firms to be secondary to those incentives listed above. The Army, too, stresses the four points which have been found to be vital to civilian recruiting programs. The Army as well as business uses many additional recruiting appeals. These are discussed further in connection with Chart 4.

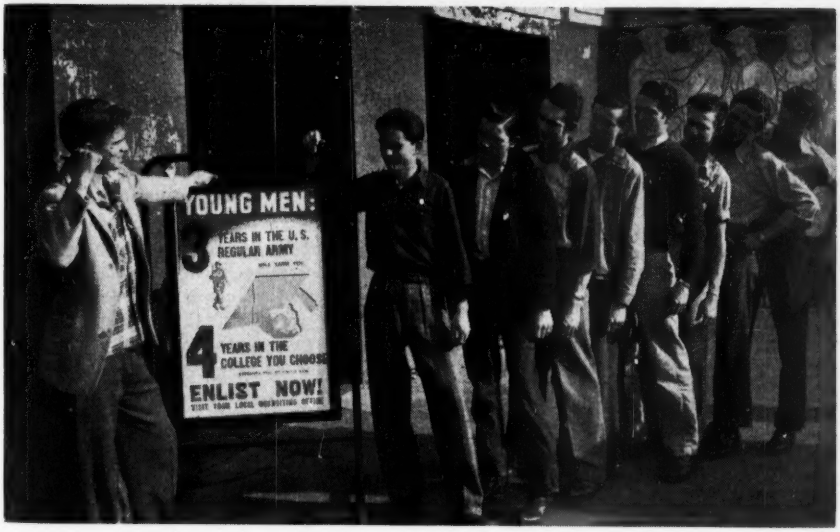
Factors in Employment

It goes without saying that qualifications required by various civilian business enterprises will vary with the type of activity of the firm. Chart 2, however, indicates that intelligence and good health are two characteristics almost universally sought. A pleasing manner and appearance are desired by those firms whose operations require their employees to deal with the public, whereas those qualities appear to be less necessary in manufacturing organizations. It is of interest to note how little stress is placed upon formal education, for the majority of jobs, by most of the firms studied. This indicates a belief that valid intelligence tests are better indices of intelligence and ability to learn than are diplomas and college degrees. Business men are inclined to weigh past experience since the employment of a person with previous experience reduces training costs. The factors given major consideration for enlistment in the Army closely parallel those which appear to be important to civilian firms. The Army, however, places great emphasis on personality adjustment. This is a means to reduce the number of soldiers who will be unable to adjust to group living, for the military services take a man away from home and cause him to adjust to a completely new environment. The Army gives less stress to previous experience when selecting men for enlistment. This probably stems from the fact that the Army, with its large manpower requirements, must be satisfied to take qualified men even though they have had no past experience of value to the service. Of course, those men who are experienced in a specialty are accepted and, if possible, placed where their specialties can be utilized.

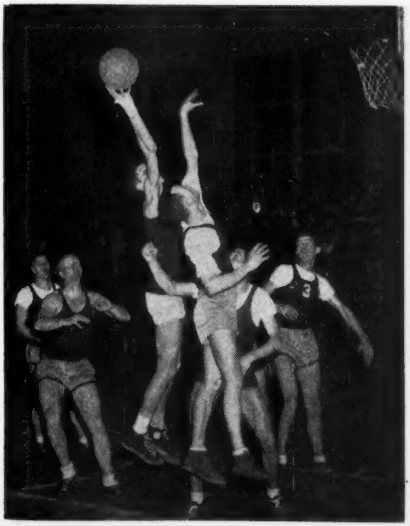
Measuring Qualifications

Chart 3 shows that civilian firms, like the Army, avoid "blind" employment. Most of the firms studied use several methods of determining the qualifications of prospective employees. The reports reveal that great stress is placed on the personal interview.

Generally, the interview procedure, however, is not limited to a single meeting between the company and the candidate. Rather, it is a most thorough screening process starting with a clerk in the outer employment office, who determines basic qualifications, and continuing up through the various echelons until a final interview with a member of the "using" department takes place. Thus, the impressions of several persons are obtained, each from his particular point of view. The study indicated that although other screening instruments are used, the determination as to whether the candidate gets his



Many personnel activities in business and industry have striking parallels in the Army. Above, Army recruiting is similar to industrial hiring. Below, left, the Army and many civilian firms require physical examinations. Below, right, athletics, stressed in the Army, are also supported by many businesses as a morale factor.—US Army photos.



job is largely based on the interview process. The facts show that many firms determine intelligence, personality, and physical fitness by means of the interview. This is due in large measure to the fact that businesses have a lesser number of jobs and a smaller volume of new employees to handle, hence, they are not faced with the problem of classifying large numbers of people.

The Army's system of classification is based on the use of several devices which produce measurements of qualifications. Each means is used only for the purpose to which it is best suited. Thus, selection for enlistment or appointment in the Army is a decision founded upon the composite results of several valid and interrelated screening instruments. Business admires and respects the progress the Army has made in the field of classification and some of them believe that in an industrial expansion, brought about by another war, they may adopt some of the Army's methods.

Assignment Considerations

There is an almost exact parallel between the Army and civilian business concerns in their doctrine governing the placement of people on a job. The policy of the Army and of most of the firms studied provides that assignments shall be made with consideration being given to the three following factors which are listed in the order of their importance:

1. Needs of the firm.
2. Qualifications of the individual versus requirements of the job.
3. Desires of the employee.

Obviously, a successful organization, civilian or military, must give primary consideration to its mission and the requirements that mission places upon the people who must accomplish it. Then, consideration must be given to the ability of the individuals available to perform the various tasks involved and to their desires and interests.

Factors of Advancement

In both the Army and industry, different doctrines apply in the promotion of managerial personnel, and supervisory and labor personnel. Furthermore, as between Army and business, a distinct difference in basic promotion policy exists. For the purpose of this analysis, the term "managerial" personnel is applied to those persons whose jobs carry responsibility and authority similar to that held by commissioned officers in the Army. Foremen and workers were grouped for comparison with noncommissioned officers and enlisted personnel.

In business, managerial personnel promotions are made only when an actual vacancy in a specific position exists. In the Army, commissioned officers can be promoted when vacancies exist in the Army at large, in which case the newly promoted officers are placed in a job calling for their grade. They can be promoted to certain grades, if qualified, after the completion of a specified period of service. This periodic promotion scheme is gaged to keep the various grades up to their required percentages. This latter feature is not normally present in business personnel management.

In all of the business firms studied, the promotion policy for managerial personnel is aimed at selecting the best man for the *particular* job vacancy, secondary consideration being given to seniority. In the Army, commissioned officers are considered for promotion in order of seniority, those qualified being selected for promotion and those not qualified being passed over or eliminated. This contrast stems from a more basic difference between business and the Army, that is, the greater numbers, the multiplicity of tasks, and the wide dispersion of the Army's personnel. The Army's promotion policy is

geared to provide qualified officers for the many jobs of higher responsibility regardless of the corners of the globe or the jobs in which they may be currently serving. Consideration of seniority helps to assure those qualified of an opportunity for reasonable career progression. There are many other reasons for this variance in doctrine, most of which can be traced to the very nature of military service and the attendant difficulty of obtaining standard evaluations on officers whose place and type of duty change frequently.

Departures in basic doctrine governing enlisted promotion and the advancement of foreman and workers still prevail. Industry normally accords primary attention to seniority. Secondary, but careful, attention is given to the qualifications of the individual. Promotion is made by business firms only to fill actual existing vacancies.

Both the Army and industry are proud of their policy which permits a man to start at the bottom and rise to the top. Many an Army general began as a private. One business executive when asked about his firm's promotion policy, said, "When the President of our firm retires, we will hire a new office boy."

With the Army Career Program in a stage of partial implementation, enlisted men are promoted under two systems. First, for those classified into career fields, the *best* qualified are selected first. Before men can be considered for promotion to fill existing vacancies under the "best qualified" system, they must possess a prescribed degree of seniority. A greater amount of seniority together with the attainment of certain proficiency standards is a basis for promotion in the four lower enlisted grades without restriction to existing vacancies. Second, for those not yet classified into a career field, seniority is an important factor in the promotion of those candidates who possess acceptable qualifications. Eventually, all enlisted men will be classified into a career field.

Personal Services

Both business and the Army provide services for the welfare and assistance of the individual. These services play an important part in the human relations program of any organization. They are tangible demonstrations of management's concern for its employees. The four most important personal services found in the Army and in business are:

1. Group Insurance Program.
2. Counseling Service.
3. Recreation and Athletic Program.
4. Medical Service.

The study reveals that most of the firms have all of these services with the exception of a formal recreation and athletic program. Those which do not have an organized recreation program, will, however, support many athletic and social activities undertaken by the employees. It is interesting to note that the Army is active in providing a comprehensive recreation program through service clubs, organized athletics, and unit social functions. This program does much to compensate for the lack of home life and stabilized living conditions which are features peculiar to the military service.

Incentives Stressed

There are many usable incentives in addition to those listed in Chart 4. However, those shown are the appeals which are stressed by the organizations under study. Generally, incentives are utilized for three basic purposes:

1. To induce the individual to join the organization.

2. To stimulate the individual to produce to the maximum as a member of the organization.

3. To interest the individual to stay with the organization.

It is difficult to tag each incentive as

falling definitely into one of the three types mentioned, since many of them serve more than one purpose. It is sufficient to observe that both business and the Army utilize incentives to satisfy these basic needs. The *degree* to which each of the incentives is actually used varies widely between firms and the Army. A most vital factor not normally thought of as an incentive to stimulate production and the desire to remain with the organization is intelligent and effective leadership. No amount of pay or privilege can replace it.

Conclusions

This study of industry, limited in scope and extent as it may be, leads one, however, to certain general conclusions. They are:

1. There are differences in the basic nature of business organizations and the Army which have a marked effect on the personnel management policies and procedures used by each.

2. Aside from certain special conditions caused by these fundamental differences, the personnel doctrine of the Army and the business concerns studied is strikingly similar.

3. The Army's personnel management program is as progressive and comprehensive as that of any of the modern businesses studied during this survey. In certain respects, the Army program is much more liberal.

4. The Army, due to its size and nature, has developed more techniques for the efficient administration of large groups.

5. Many civilian industrial firms regard the Army as a proving ground for the development of scientific personnel management techniques which may be essential during times of rapid industrial expansion.

6. Surveys of business organizations are helpful to Army officers by assisting them to gain a broader perspective of the field of personnel management and to acquire increased confidence in the system used by the Army.

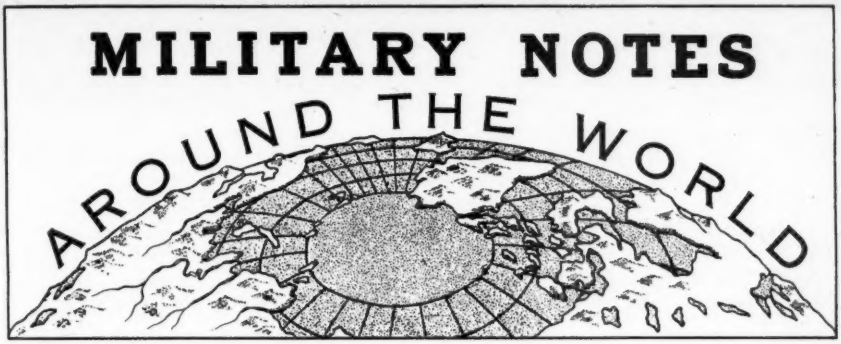
More than any other institution, the Army is in the business of people.

General Omar N. Bradley

In the long and tragic history of warfare, the most important element of armies has always been men. Even in this day of widespread mechanization and almost unbelievably destructive weapons, this ancient principle still holds true.

General J. Lawton Collins

MILITARY NOTES AROUND THE WORLD



UNITED STATES

Rocket Fuels

Three readily available chemicals that show promise as fuels or aids in propelling the rockets of the future were described recently to members of the American Rocket Society and the American Society of Mechanical Engineers.

A representative of the Allied Chemical and Dye Corporation said the nation's rocket fuel resources were strengthened by a potentially abundant former chemical "orphan," nitrogen tetroxide. The chemical is not a fuel, but rather, is an oxidizer to provide the necessary oxygen for combustion.

Nitrogen tetroxide is a chemical of high oxygen content and is easily made from ammonia. If the continuing tests of military and private research groups should create a high demand for nitrogen tetroxide, the United States would have a potential production of 500,000 tons annually, if only 10 percent of all ammonia output was converted.

Rockets, which operate high above the earth where there is not enough oxygen to support combustion, need an efficient oxidizer as much as they need an efficient fuel. The chemical characteristics of nitrogen tetroxide that emphasize its value as a fuel oxidizer are high chemical stability, high density, a low freezing point, and little susceptibility to decomposition.

Concentrated hydrogen peroxide, a leading liquid rocket propellant successfully used by the Germans in somewhat impure solutions, was discussed by representatives from the Buffalo Electro-Chemical Company.

The present availability of pure, stable hydrogen peroxide, plus experience with its handling and storage characteristics, they said, make it an attractive fuel for rocket and guided missile development. They described it as stable in extended storage over a wide range of normal temperatures with high density, negative heat of formation, high specific energy release, and high percentage of available oxygen. The chemical, they added, has for some time been readily available in commercial quantities.

The handling of liquid oxygen, a third possible rocket fuel, was discussed by a representative from the Linde Air Products Company. He pointed out that the foundations for solving some of the special problems in rocket engineering had been laid in the normal development of the commercial oxygen industry, which has assured an ample supply of liquid oxygen for extensive experimental projects.—*The New York Times.*

Rescue Radio

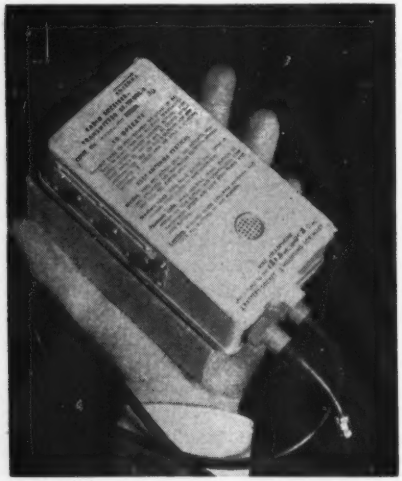
A new air-sea rescue transmitter-receiver has been designed and developed by the Air Matériel Command's Communication and Navigation Laboratory, Electronics Sub-Division, and was given operational tests recently at Eglin Field, Florida, and Seal Beach, California.

The new equipment is a miniaturized battery-operated unit which will in time become standard equipment for every USAF pilot and airman, replacing the old "Gibson Girl." The unit is already in production in the Los Angeles plant of the Hoffman Radio Corporation and is the product of several years of research and labor on the part of the Wright Field and Hoffman engineers.

Up to now, men leaving a ditched or sinking airplane for a life raft have had to resort to the "Gibson Girl," a rescue set which weighs about 40 pounds, complete, and operates on medium frequencies necessitating yards of antenna launched by means of a kite or balloon.

Originally designed by the Germans and improved by the British and by the United States, the "Gibson Girl" is in wide use. Its successor, however, is far less cumbersome, and much more reliable.

The new set, known technically as the URC-4, is small, not much larger than a ration kit, and it is hard to imagine anything which could surpass if for compactness, efficiency, and ruggedness. It can be held in one hand. The mercury-type battery is a separate unit with a rubberized cable connection attaching it to the transmitter-receiver section. The cable is just long enough to allow the battery to be slipped conveniently in a pocket while the set is in use.



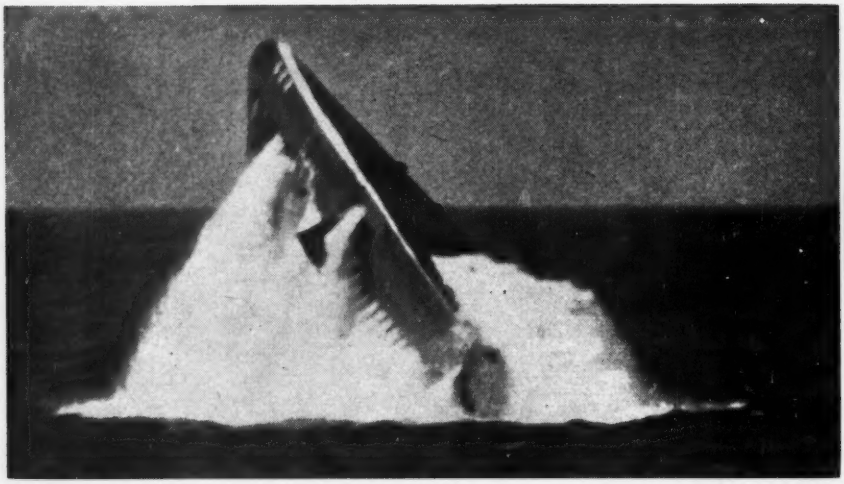
The midget transmitter-receiver, left, is the answer to the problem of faster air-sea rescues. Right, one method of carrying the battery.—Air Matériel Command photo.

Operating on two channels, Very High Frequency and Ultra High Frequency, the set can be switched from one to the other instantaneously. Technicians are impressed by its stability and by the fact that the midget set is able to transmit and receive both voice and code signals.—Air Matériel Command.

Ordnance Developments

Ordnance equipment of all kinds is developed and tested at the US Army Ordnance Proving Ground at Aberdeen, Maryland. Above, a 51,300-pound cross-country carrier being tested on the twist road to determine its characteristics on very uneven surfaces.—Department of Defense photo.

Versatile Sub



The USS *Amberjack*, above, one of the US Navy's newest submarines, demonstrates its capabilities. The sub was taken down to a depth of 150 feet and then brought up at full speed to break surface at an angle of 38°. The normal surfacing angle is 5°. This was a deliberate demonstration, not a normal maneuver.—Department of Defense photo.

Anti-Snorkel Device

The Navy is fitting its airplanes with a new and secret radar device to "see" the almost invisible and deadly *snorkel* submarine (MILITARY REVIEW, August 1949, p. 66).

The *snorkel* or "breathing" submarine—perfected by the Germans and now in use by this and several other countries, including Russia—has been a difficult problem for anti-submarine experts. The breather tube allows the submarine to operate on its regular diesel engines instead of batteries while submerged. Therefore, it can remain below the surface almost indefinitely and can travel at about twice the normal submerged speed or at 17 knots or faster.

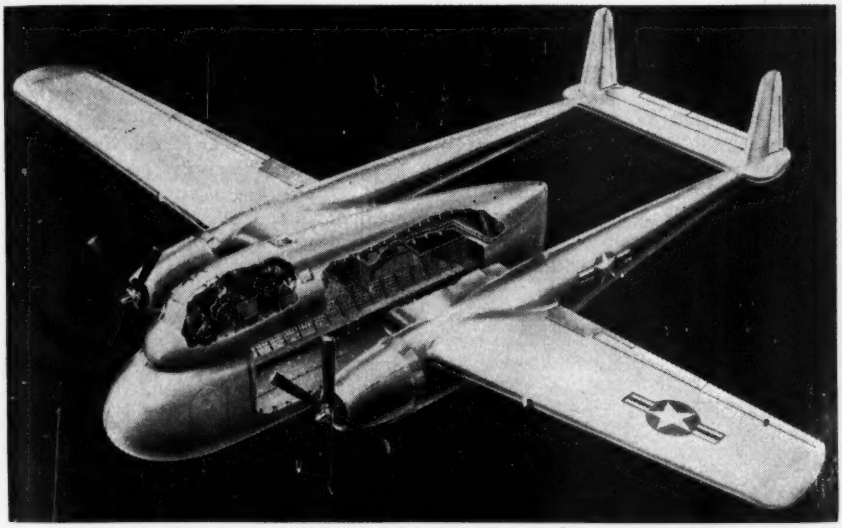
But of still greater importance is the fact that, with only the small top of the breather tube exposed (riding a foot or so above water), it is almost impossible for conventional radar equipment to locate the sub.

Moreover, recent development of an anti-radar "paint" confounded the problem. The paint reduces the reflection of the radar impulses striking its surface, thus reducing or preventing their reflection back to the searching set of the hunter plane or ship. Radar waves normally will not penetrate water.

No technical explanation of the new anti-submarine equipment for planes has been given.

However, the fact that it is airborne indicated strongly that the gadget works on a radar principle. How it overcomes—if it does—the effect of the counter-radar "paint" on the *snorkel*, or whether radar penetration beneath the water has been attained, remain unanswered questions.—*The New York Times.*

Pack Plane



This is an artist's conception of the Fairchild pack plane, now being prepared for its first flight. The plane, designated the *XC-120*, features a detachable fuselage, or "pod," which can be unfastened from the plane on the ground. This might solve the problems faced in making the Army totally air-transportable.—Fairchild Aircraft Corp.

Health of the Army

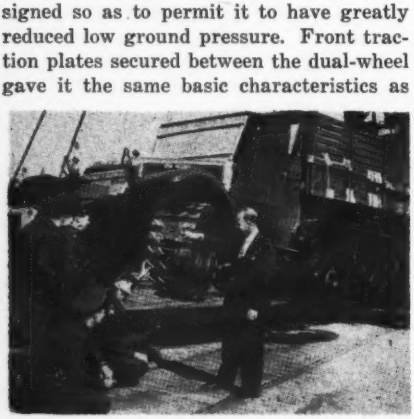
The health record achieved by the United States Army during 1949 is a tribute to the efficiency of the Medical Department. The 1949 daily admission rate, which covers not only hospital patients but also those who were relieved of duty by reason of illness or injury for more than one day, was 128 per 100,000. This compares with 132 for 1948, and with the average wartime rate of 202, excluding casualties. There was also a corresponding decline in the death toll, from an annual rate of 220 per 100,000 in 1948, to 200 in 1949. This health record, the best in the history of the Army, was achieved in spite of a continued and critical shortage of medical officers. It was accomplished through the consistent application of preventive medicine and the rigorous observance of high sanitation standards.

The low incidence of disease is the more remarkable because of the fact that a high proportion of the Army is stationed overseas, much of it in areas where sickness is more prevalent than in the United States. The decline in respiratory afflictions, venereal disease, and injuries is evidence both of improved discipline and of higher standards of preventive medicine.

The health of the Army directly reflects the contentment of the command. Health, morale, and efficiency are inseparable. Since the American Army is the healthiest in the world, it follows that its morale and efficiency are correspondingly high.—*Army and Navy Journal.*

Arctic Mobility

Speed and mobility are key problems in the Arctic. Will the half-track of World War II provide part of the answer? The Transportation Corps Board has developed a special track to do the trick. It is hoped that the vehicle will carry a cargo load of 6,000 pounds over Arctic snows at a speed well over 15 miles an hour. In former tests, Arctic cargo carriers were unable to do better than 2½ miles per hour. In modifying the half-track, the conventional track was redesigned so as to permit it to have greatly reduced low ground pressure. Front traction plates secured between the dual-wheel gave it the same basic characteristics as



Half-track equipped for use in the Arctic.

the half-track pattern. Tests have indicated only 7.3 pounds per square inch ground pressure. It is hoped the carrier will be effective in mud as well as on snow.—*Transportation Journal.*

Silent Chamber

A "silent chamber" that produces absolute stillness has been designed and constructed by Signal Corps engineers for the testing of delicate instruments.

Known scientifically as an anechoic (no echo) chamber, it was designed primarily to determine operational accuracies of microphones, head-sets, loud-speakers, and other items requiring minute examinations.—Office, Chief Signal Officer.

Dehydrated Foods

The Army is going to use dehydrated foods on a very limited scale to encourage improvement of these products and to prepare for any emergency that might require their use as an important factor in troop feeding.

During World War II, dehydrated foods were issued extensively, especially overseas. Since the War, because of the availability of fresh and canned products, dehydrated items have been dropped from the soldier's ration.

Advances made in dehydrating processes during the last few years have produced several items which, when properly reconstituted, are virtually the equal of fresh foods in taste, texture, and nutrition. They have stability during extended storage and lightness in weight—an advantage when shipping space is at a premium. In time of war, dehydrated foods help conserve the nation's supply by distributing the demand geographically and in point of time.

The new program of the Quartermaster Corps provides for limited consumption of 12 dehydrated food items by troops. White potatoes, eggs, onions, and apples will be fed once a month. Dehydrated sweet potatoes will be served seven times a year; cranberries, five times; cabbage and carrots, four times; beets, three times; and bean soup, chicken noodle soup, and pea soup twice a year.

In reinstating the dehydrated food program, the Army explains its objectives are to provide school as well as on-the-job training in the proper preparation and service of such items; to establish acceptability on the part of troops; to provide a means of further research and development of established products together with new products; to give industrial and technical experience essential to expansion in case of emergency; and to permit maintenance of preferred operational project stocks.—*Infantry Journal.*

CANADA

Mapping Canada

Although the mapping of Canada was begun early in the country's history by its explorers, today only a fraction of the Dominion's territory has been adequately mapped from a military standpoint.

The responsibility for the production of maps lies with a number of government agencies, but the making of military maps is done by the Army Survey Establishment and the Royal Canadian Air Force.

It is the job of the Army Survey Establishment to produce the maps required by each of the three services for land operations, and to maintain stocks of such maps. This involves co-operation with the Bureau of Surveys and Mapping in both original mapping and the utilization of existing work in the publication of military maps. It is also responsible for the preparation of special maps required for training purposes.

In this respect, during the past fiscal year, the Army Survey Establishment, working in co-operation with the Bureau of Surveys and Mapping and other agencies, completed to the drawing stage 69,850 square miles of medium- and large-scale mapping. Of this total, 23,400 square miles were produced by the Army Survey Establishment. Revision was made of 2,100 square miles of medium-scale mapping and 8,600 square miles were converted from 1 inch to 1 mile to 1/50,000.—*Canadian Army Journal.*

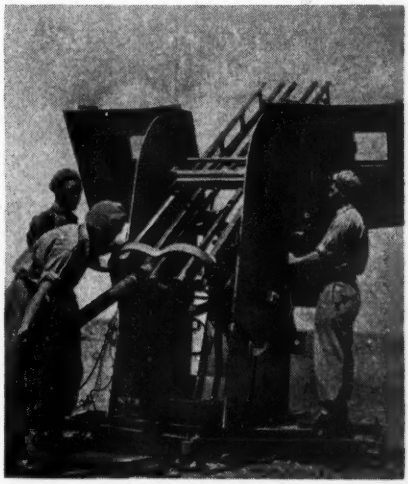
Arms Budget

Canada will increase her defense expenditure by $42,000,000 to $425,000,000 during the next fiscal year, the Finance Minister told the House of Commons recently. Total expenditure for the coming year will be $2,308,000,000, slightly less than last year.—*The New York Times.*

AUSTRALIA

Rocket Range

It was recently announced that agreement had been reached between the British and Australian governments for a major expansion of the secret research work on long-range weapons at Woomera, in South Australia (MILITARY REVIEW, December 1948, p. 64). Some of the first test "rockets" were recently fired from this range. Woomera, the name chosen for the range-head, was an apt choice, being the name of a weapon described as "a launching device or kind of sling," a companion to the boomerang.

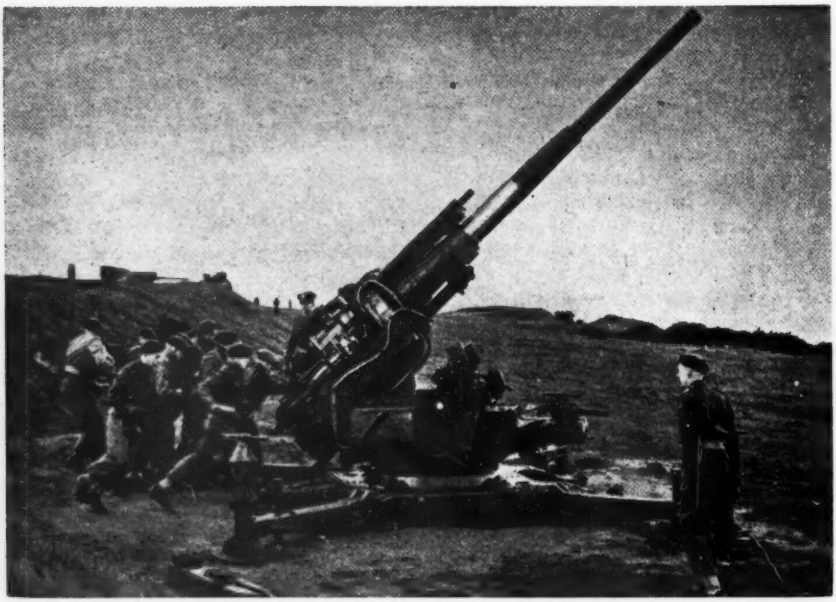


Testing supersonic weapons in Australia.

The Australian Prime Minister has described the range "as Australia's main defense research project" and has said that the object of the whole plan was to do work which could not be undertaken in Britain. The range is situated in one of the most sparsely populated areas in the British Commonwealth. The missiles can fly on a northwest course towards the Indian Ocean, 1,200 miles away.—*The Illustrated London News*, Great Britain.

THE NETHERLANDS

Antiaircraft Training



Small detachments of Dutch troops have been going to England to carry out firing practice on British Army ranges. Above, a group firing a 3.7-inch mobile heavy antiaircraft gun on the Weyborne AA range in Norfolk. British troops have also been going to Holland to assist Dutch troops in their training.—*The Sphere*, Great Britain.

BELGIUM

Army Reorganization

Reorganization of the Belgian Army defense pattern on the Western Union of Europe was officially announced recently.

The staff of the armed land forces was abolished and three commands, each led by a general, were created. One command of combat troops will be at the disposal of the Western Union staff at Fontainebleau, to be put into action outside Belgium if necessary. The second combat troop command will defend national territory. The supply troop command is charged with maintenance of bases and transport.—*The New York Times.*

SWITZERLAND

Studying Atom

What is probably Europe's highest atomic research station is being manned by Swiss scientists at Jungfraujoch ("Maiden Ridge"), Switzerland, in the Bernese Alps.

Carved out of rock and ice at an elevation of 11,342 feet, the spot has Europe's highest railroad station and its highest tourist hotel. The only other buildings are an Alpine research institute and two observatories, one used for astronomy and the other now devoted to atomic studies. "Streets" are a network of underground passageways.—*The New York Times.*

GREAT BRITAIN

Centurion Tank

Details pertaining to Britain's new super tank, the 50-ton *Centurion*, have just been released from the secret list.

The *Centurion* was designed by the Ministry of Supply Fighting Vehicles Establishment in conjunction with Vickers-Armstrong Ltd. As far as is known, it is the only new tank to be produced in quantity by any nation since the end of the War.

It is powered by a Meteor gasoline engine—an adaptation of the Rolls-Royce Merlin aircraft engine, and it develops 635 basic horsepower. The gearbox and steering, combined in one unit, is of the well-known Merritt-Brown type. The main armament of the tank consists of a 17-pounder gun.

The hull is sealed to allow the tank to pass through shallow streams and rivers without the addition of special fording devices.

Britain's new heavy tank, the *Centurion*, is now in production. Above, right, the tank fording a stream; above, left, final assembly showing the turret, complete with gun, being fitted to the hull; below, two different views of the tank showing its maneuverability. The heavy skirting plates provide protection for the suspension system.

The *Centurion* is now the standard tank of the Royal Armored Corps. It played an important part in the large-scale maneuvers held by British, United States, French, Norwegian, and Belgian forces near Paderborn, Germany, late in 1949.—*The Sphere*, Great Britain.

USSR

Air Force

Russia has a bigger air force than the United States, but the US holds actual "air supremacy," according to the executive secretary of the National Advisory Committee for Aeronautics.

He believes that air power is the key to security in the atomic age. He declared that Russia had a higher rate of aircraft production and more planes in military service than the United States, but added:

"We think we still have supremacy in the air because of the superior performance and military effectiveness of our aircraft."

He noted that some British reports credited the Russians with having a new jet fighter plane that might surpass the United States Air Force's prized *F-86 Sabre* fighter.

The *Sabre* officially has flown at more than 670 miles an hour. The official organ of the British Royal Aero Club has said the new Soviet plane might be better as the Russian plane is equipped with a Rolls-Royce Nene jet engine that Britain has exported to Russia.—*The New York Times.*

Naval Strength

The latest available reports on the Soviet Navy estimate its fighting strength at 270 submarines and 127 assorted surface craft. This compares with the United States fleet of 164 surface vessels and 74 submarines. In reality, however, the Soviet ships are believed decidedly inferior to United States fighting ships.

The US Chief of Naval Operations has listed the probable strength of the Soviet fleet as "about 3 old battleships, 14 cruisers, 110 destroyer types, and about 270 submarines." To this can be added motor torpedo boats, submarine chasers, and inshore patrol craft, according to his estimate.—*The New York Times.*

Naval Ministry

Russia has set up a separate Ministry of the Navy in her drive to build up sea power to match her strength on land, the Moscow radio disclosed recently. The Presidium of the Supreme Soviet announced the creation of the Ministry, divorced from the rest of the armed forces.

The disclosure followed by only 2 months a report by the authoritative *Jane's Fighting Ships* that the Soviet Union was building up its naval strength in a program calling for the construction of at least three ultra-modern battleships and up to 1,000 submarines.

The new ministry will be headed, the radio said, by Admiral Ivan S. Yumashev, former Deputy Minister of the Armed Forces and Commander in Chief of the Soviet Fleet.

The old Ministry of the Armed Forces will be renamed the Ministry of the Army.

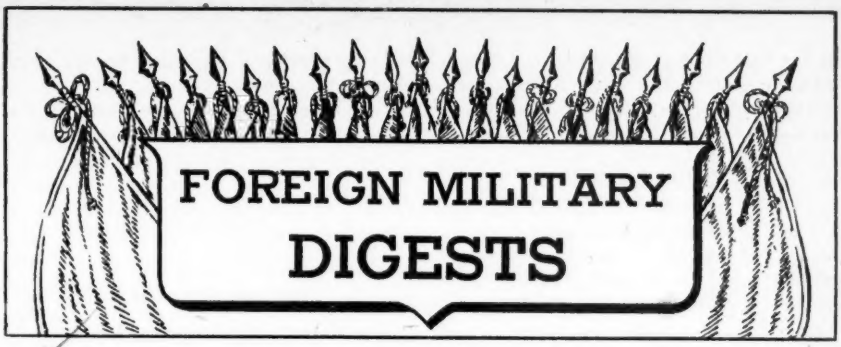
The brief report, heard in London by the Soviet monitor, gave no hint as to the disposition of the Soviet Air Force.

Observers speculated that the reshuffle was part of a general expansion of the Soviet armed forces that would likely include creation of a separate Soviet ministry of military aviation.

On 4 July 1949, the Soviet Union celebrated Navy Day with demands that the fleet be greatly strengthened.

Admiral Yumashev said at that time that the sea forces should be expanded as a component of the armed forces of the Soviet Union. Admiral Filip S. Oktyabrysky, wartime defender of Sevastopol, said that "the interests and security of our country demand further strengthening of the naval forces."

The two admirals both declared that as a result of World War II, the Soviet Union was now a great naval power with an increased number of warm-water ports and naval bases.—*The New York Times.*



The Western Union and Its Defense Organization

Digested by the MILITARY REVIEW from an article by Field Marshal The Viscount Montgomery of Alamein in the "Journal of the Royal United Service Institution" (Great Britain) November 1949.

THE Western Union may be destined to play a significant role in history, and it is well that its constitution, progress, and evolution should occupy the minds of all thinking people. Within the framework of the Atlantic Pact, and, in turn, of the United Nations Charter, it forms the foundation of collective security in Western Europe. Born of the fear of aggression from the East, the Defense Organization is nourished by the determination of the Western European countries to ensure that never again will their homelands be invaded by a foreign enemy.

The Brussels Treaty

The treaty which was signed in Brussels on 17 March 1948, by the Foreign Ministers of Belgium, France, Luxembourg, the Netherlands, and the United Kingdom, provided for co-operation between the five countries to strengthen the economic, social, and cultural ties by which they are already united. Furthermore, they pledged themselves to afford assistance to each other in accordance with the Charter of UNO in maintaining international peace and security and in resisting any renewal of a policy of aggression. For the purpose of consulting together on all the questions dealt with in the treaty, a Consultative Council was created.

The Consultative Council

The supreme authority in the Brussels Treaty Organization is the Consultative Council. Composed of the Foreign Ministers of the five powers, it meets whenever it is necessary, at least once in every 3 months, successively in the five capitals. The Council receives the reports from the different organizations of the Brussels Treaty which are presented to it by the Permanent Commission, and it gives these organizations directions for the realization of the objectives of the Treaty.

The first meeting of this Council was held in Paris on 17 April 1948. In the course of this meeting, the Council decided on the creation of the Permanent Commission and the Military Committee.

In the autumn of 1948, the Council examined the results of the preliminary conversations held in Washington during the summer on the problem of North Atlantic security and it accepted the principle of a defensive Atlantic Pact.

The Permanent Commission

The Permanent Commission, which met

for the first time on 24 April 1948, represents the Consultative Council during the intervals when the latter is not sitting. The Commission is composed of the heads of the four diplomatic missions in London, and a British representative with the rank of Ambassador. It is established in London, meets at least once a week, and is assisted by a secretariat-general organized on an international basis which also serves the Consultative Council.

The Permanent Commission is the organ of consultation between the five countries on the political level, and coordinates and directs the activities of all the organization: defense, economic, financial, cultural, and social committees.

Defense Organization

The Brussels Treaty was the first concrete step towards the ideal of European unity. But while that ideal remains the ultimate aim, the political complex of the Continent compelled the Brussels Powers' statesmen to embody in the Treaty measures for collective self-defense. The five nations were confronted with the need to build up their military strength, in conjunction with economic recovery, in order to re-arm and re-equip themselves for self-preservation.

Under Article IV of the Brussels Treaty, the five powers agreed to render all military and other aid and assistance in their power to any party attacked. In order to implement this Article, a five-power military committee was established in London in May 1948. From the original military committee, a comprehensive military defense organization developed.

The tasks confronting the Western Union Defense Organization were briefly:

1. To strengthen, co-ordinate and integrate the military and supply effort of each country.

2. To study the strategic and tactical problems of the defense of Western Europe.

3. To provide a command organization to meet any emergency.

The defense organization started its task in April 1948, and 6 months later it had shaped sufficiently for the command organization to be set up. I will deal first with the higher direction organization, and secondly, with the command organization.

Defense Committee

The Western Union Defense Committee consists of the five Ministers of Defense. It is the governing and controlling body responsible for the defense of Western Europe. It meets at least once in every 3 months, in one of the capitals. It ensures the higher direction and control of the whole organization in the name of the heads of the five governments. Serving this Committee are two high level official bodies—the Western Union Chiefs of Staff Committee and the Western Union Military Supply Board.

Chiefs of Staff Committee

The Western Union Chiefs of Staff Committee (WUCOS) advises on all matters affecting the defense of Western Europe as a whole, and considers in common all matters which may be referred to it by the Western Union Defense Committee. Worldwide commitments are taken into account in reaching decisions on major policy. The Committee consists of the National Chiefs of Staff of Land, Sea, and Air Forces of the five nations, although usually each nation is represented on the Committee by one Chief of Staff. The Committee meets regularly, normally in London.

In order that those problems which affect only one service may be fully studied, periodical meetings are also held by the National Chiefs of Staff of the individual services.

Military Committee

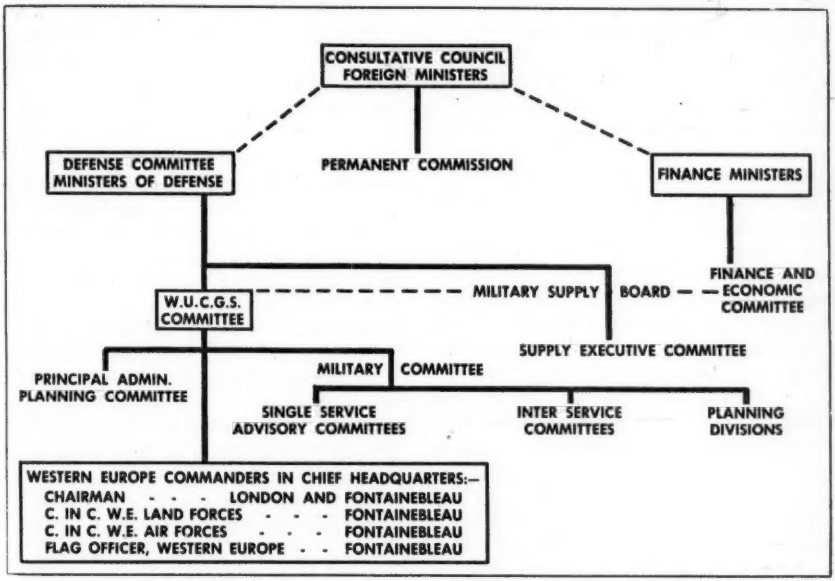
The Permanent Military Committee is

composed of representatives of the national Chiefs of Staff of the Five Powers, and sits in London. In effect it is the permanent staff of the Western Union Chiefs of Staff Committee. The members arrange their meetings, are responsible for the preparation of the necessary documents for their consideration, and are also responsible for the coordination of all work which is done on behalf of the Western Union Chiefs of Staff Committee.

At the same level as the Military Committee is the Principal Administrative Planning Committee, which is responsible to the Western Union Chiefs of Staff. The role of this Committee is to examine from the international and inter-service point of view administrative problems connected with the raising and maintaining of forces, with mobilization, and with operational plans for Western Union defense. The Committee, which meets as and when required, consists of one high level administrative representative from each of the five powers.

The remainder of the organization serving the Western Union Chiefs of Staff Committee, under the Permanent Military Committee, can be considered under three headings:—

1. SERVICE ADVISORY COMMITTEES:—For each of the three services, there is an Advisory Committee sitting in London composed of permanent members representing their respective departments in their own countries. They are concerned in the standardization of equipment and methods in the forces of the five powers, and other single-service policy matters. All three Service Advisory Committees have set up a number of sub-committees to deal with specialized matters. These are composed of representatives of the departments concerned in each country, meeting together from time to time.



2. INTER-SERVICE COMMITTEES:—There are a number of Inter-Service Committees to deal with policy matters of an inter-service nature, and in certain respects to arrange executive action. They are composed of representatives of the departments concerned in each country, meeting together as required.

3. PLANNING DIVISIONS:—It has been necessary to establish certain planning divisions in London whose functions are to carry out examinations for the Military Committee and the Principal Administrative Planning Committee; to coordinate, on behalf of these committees, planning done by various national and international bodies; to make effective the more general five-power plans, such as that prepared by the Commanders in Chief Committee; and to prepare projects for approval by the five governments where financial provision, concerning more than one country, is required. The Planning Divisions are normally composed of one representative from each country who represents all three services, but, so far as is possible, the members themselves are drawn from the three services. The Planning Divisions maintain close liaison with the Service Advisory Committees and with the Inter-Service Committees.

Military Supply Board

The Western Union Military Supply Board was set up in September 1948, and it is on the same level as the Western Union Chiefs of Staff Committee, coming under the Defense Ministers.

Its tasks are broadly as follows:

1. Advise on production of equipment and supplies.

2. Recommendations as to how military requirements can be met.

3. Implementation of production programs.

In view of these tasks, it must work in close collaboration with the Chiefs of Staff Committee. The division of responsibility between the two is that, while the Supply Board is responsible for production and maintenance, the Chiefs of Staff Committee must define the military aim to be achieved in types of equipment, scales of reserves, etc.

The Supply Board itself consists of one representative of high standing from each country. It meets as required and is served by a permanent staff in the form of the Supply Executive Committee, which is analogous to the Military Committee and works in close consultation with it.

The tasks of the Supply Executive Committee naturally go into greater detail and cover the matching of production possibilities with requirements in the widest sense, such as raw materials, labor, siting of plants, economy in production, size of available plants, etc. The Executive Committee arrives at recommendations in broad outline and thereafter the problems are passed to specialist sub-committees, such as tanks, mechanical transport, small arms, aircraft, etc., where they are completed for the contract stage, and standardization is closely watched. Selection of prototypes is done in close consultation with the Military Committee and its Service Advisory Committees.

The permanent staff consists of national delegations of service as well as civilian members, comprising experts from the various supply departments of each country.

Command Organization

At the beginning of October 1948, the governments of the five powers appointed a Commanders in Chief Committee to study the tactical and technical problems of the defense of Western Europe.

I was officially appointed as Chairman of this Committee in October 1948, and the appointments were announced of General de Lattre de Tassigny, as C in C Land Forces, Air Chief Marshal Sir James Robb as C in C Air Forces, and Vice Admiral

Jaujard as Flag Officer Western Europe.

The Commanders in Chief Committee is responsible to the Western Union Chiefs of Staff Committee for the preparation of plans for the defense of Western Europe. It receives its orders and directives from the Defense Committee at governmental level, through WUCOS.

No member of this Committee exercises executive command in peacetime, but it is intended that the members should assume command of such forces as may be placed at their disposal in the event of aggression in Western Europe. Steps are being taken to ensure that effective command will be able to be exercised immediately at the outbreak of a conflict.

The Committee has no responsibility for the purely home defense problems of individual countries, with one exception in regard to territorial air defense. There must be, however, a constant interchange of plans in order that proper coordination is achieved. Most of the measures which must be taken to implement the Committee's plans are the concern of the national authorities alone, as the Commanders in Chief have no executive command in peacetime. The Committee must therefore be authorized to provide additional information to the national authorities, and to offer such guidance as may be required. In the same way, the plans of the national authorities may well be the concern of the Commanders in Chief, in order that they may satisfy themselves that what is being done links in with their own plans and meets their requirements.

Air Forces

In regard to territorial air defense, there have to be special arrangements. The Commander in Chief Air Forces in wartime would not only be responsible for commanding all Tactical Air Forces placed at the disposal of the Supreme Commander, but also of the air forces assigned to the territorial defense of Northeast France and Benelux. These forces would come under an inter-allied air command.

This organization is necessary because the areas of operations of the Air Defense and Tactical Air Forces overlap. To make the best use of these air forces, it is essential to have centralized control. The controlling authority will also need to be in direct contact with the United Kingdom Fighter Command and the Air Defense Organization covering the rest of France, i.e., the West and Southwest.

Flag Officer

The position of Flag Officer Western Europe warrants a word of explanation as it is unusual and, to a certain extent, without precedent. His functions and responsibilities are hence not so obvious and clear cut. His title is possibly misleading.

Although he is a full member of the Committee for planning purposes in peacetime and will be directly responsible to the Supreme Commander in the event of war—in other words, precisely on the same level as the Commanders in Chief of the land and air forces—he is not a Commander in Chief in the same sense as they are, as, except for forces which may be allocated to him for special tasks, he does not exercise command over the naval forces operating in Western European waters.

The reason for this is that the sea communications of Western Europe cannot be viewed in isolation from the North Atlantic communications and, hence, from the great sea lanes of the world. The operation of major naval forces, in so far as they affect the land battle in Western Europe, must therefore be considered as part of a strategic whole, which is worldwide, and which must take into account the many commitments outside Western Europe.

Thus, the Flag Officer Western Europe has two rather separate functions, first, as a full member of the Commanders in Chief Committee in all aspects of the planning, and second, to act as a link between the Supreme Commander on the one hand and the appropriate national naval authorities and the national Admiralties on the other, in order that the requirements of the land and air forces may be met in the best possible way.

His responsibilities can be defined as follows:

1. To bring the naval point of view into the planning and deliberations of the Commanders in Chief Committee and to participate as a full member of the team in their responsibilities.

2. To ensure that the logistic support for the land and air forces arriving in Western Europe is routed when and where required.

3. To transmit to the naval authorities concerned the requirements of the supreme commander for support or amphibious operations and, under given conditions, to take operational control of these forces.

To exercise these functions, his headquarters must be alongside that of the Supreme Commander; he is thus a "landlocked" admiral with no sea-going command.

As there still seems to be some misunderstanding as to why Flag Officer Western Europe did not fly his flag at sea during the recent naval exercises, I would like to emphasize that the fleets were representing a convoy coming in from the Atlantic, passing up the Channel and finally becoming several cross-Channel convoys. During this time, the Flag Officer Western Europe was exercising his proper function at his headquarters alongside that of the Supreme Commander, where his organization was in operation. After the exercises, he attended the final conference to see how his part had linked up with the rest.

Method of Work

The method of work in the Cs in C Organization is similar in many respects to that in the Western Union Defense Organization. That is to say, matters peculiar to a single service are handled by the appropriate headquarters within the framework of the joint plan. Matters of common interest and all matters of policy are dealt with through the machinery of joint staffs whose members are drawn from the four separate headquarters—Chairman, Land, Air, and Sea. Each headquarters is organized on the four-bureau system—G-1, Personnel; G-2, Intelligence; G-3, Operations and Training; and G-4, Logistics.

Since its establishment, the Committee, consisting of the Chairman, two Commanders in Chief and Flag Officer Western Europe, has had many meetings, some in England and some in France. The early meetings were formal, followed by the issue of very full minutes, sometimes amounting almost to a verbatim report. As time went on, it became clear that better results would be obtained if meetings were less formal, followed by the issue of a short record of decisions reached and rulings given.

A Chiefs of Staff Committee has proved an essential link in the Cs in C Organization. Apart from reaching agreement on matters of minor importance not requiring decision by the Commanders in Chief themselves, the four Chiefs of Staff are responsible for approving the terms of reference on which the Combined Planning Staff and other inter-service bodies will carry out their various studies. The Chiefs of Staff Committee is responsible for presenting all business to the Commanders in Chief Committee and also for taking subsequent action to give effect to their decisions.

On the operational side, there is a Combined Planning Staff (CPS) analogous to our Joint Planning Staff in Whitehall.

This Combined Planning Staff works on instructions received from the Chiefs of Staff Committee and is served by a permanent secretariat. In order to ensure the coordination of all planning and to assist the various secretaries, a principal secretary has been appointed. In point of fact, this individual combines this duty with that of Brigadier—General Staff of the Chairman's Paris echelon. I should like to take this opportunity of stressing how small the whole organization is. Four nations, each with three services (Luxembourg must, for obvious reasons, remain a minor partner, militarily) provide a total of under 150 staff officers for the Commanders in Chief Organization.

When an instruction has been considered by the Combined Planning Staff, it is sometimes decentralized to a working sub-committee. Such a sub-committee may be specially organized for the purpose, and composed of members of the arms and services affected by the subject to b considered. Precise terms of reference, including the date by which it is to report, are given by the Combined Planning Staff to such a sub-committee. If the question to be considered has logistical problems, they are handled by the Combined Administrative Staff which works parallel to the CPS.

A Combined Administrative Planning Staff—the counterpart of our Joint Administrative Planning Staff—is composed of the senior administrative planning officers of the four headquarters. It works in accordance with directives issued by the Chiefs of Staff Committee. In order to ensure that due weight is given to the administrative aspect, it is permanently represented on the Combined Planning Staff by one member.

Under present conditions, all intelligence for the Cs in C Committee is obtained through the Military Committee and is handled, in our organization, by an Intelligence Committee. Signal planning is carried out by a Joint Signal Board, in close collaboration with the Combined Planning Staff. Both these staffs report direct to the Chiefs of Staff Committee.

United States liaison officers are accredited from the US Zone of Occupation in Germany to advise us in our planning at Fontainebleau and to maintain liaison with the US European Theater of Operations.

The Chairman's Headquarters

The need for maintaining close contact with the Military Committee and, indeed, with the whole of the higher direction organization—which is based in London—has made it necessary to organize the Chairman's headquarters in two echelons.

The Paris echelon takes its place in the combined set-up in Fontainebleau. The London echelon provides the link with superior Western Union authorities. With the London echelon, the three Cs in C maintain their own rear link organization.

US-Canadian Observers

It was evident to the United States authorities that the Brussels Treaty Powers were anxious to secure US participation in their military conferences, and on 15 July 1948, a formal invitation to them to send military experts to London was made by the Western Union. The invitation was accepted the next day and a delegation arrived in London on 18 July. Since then, the United States has participated in work on a non-membership basis.

The US delegation, known as DELWU, and headed by a Major General, is an inter-service delegation under the US Joint Chiefs of Staff. DELWU is accredited to the Military Committee. By invitation, it also took part in the work of the Military Supply Board and Supply Executive Committee until April 1949, when Mr. Joseph Taggart was appointed on a permanent basis.

The task of DELWU is to represent the

US Joint Chiefs of Staff on the Military Committee and its sub-agencies, to participate in discussion of military plans, and to assist in the drawing up of a co-ordinated military supply plan. They also ensure that in the work in London all planning between the military authorities in Germany is taken into account, and they therefore maintain very close touch with the US Military Commander in Germany.

The head of the US delegation is the Senior Army Member and he has under him a Senior Navy and Senior Air Force member. The staff is organized in three sections: Plans and operations, intelligence, and Logistics. This provides representation in every branch of the Military Committee's activities.

The Canadian Chiefs of Staff are similarly represented by one brigadier and one group captain. The First Economic Secretary at Canada House is Canada's representative on the Supply Board.

In their work, the United States and Canadian Staffs are active observers, making suggestions where appropriate, offering informal comments, and making formal statements on occasions based on guidance from the US Joint Chiefs of Staff and the Canadian Chiefs of Staff (whom they keep fully informed). But, being accredited on a non-membership basis, they do not sign any papers or endorse any conclusions or recommendations.

By invitation, the head of the US delegation used to attend WUCOS meetings and, occasionally in the early stages, Commanders in Chief Committee meetings. In October 1948, the Five Powers formally invited US participation in the work of the Western Union Chiefs of Staff Committee, and at the end of December 1948, the US Military Commander in Germany was designated for this duty. He is, likewise, answerable to the US Joint Chiefs of Staff. The Canadian Chiefs of Staff representative attends WUCOS meetings by invitation.

Through DELWU and Canadian participation, planning has been enabled to proceed on sound lines, taking into account US views, in particular as regards the US forces in Europe. It has been possible to avoid many assumptions which would otherwise have had to be made and which would have robbed much of the work of the Western Union Defense Organization of reality.

Requirements for Success

1. CLEAR POLITICAL DIRECTION AND DECISIONS.—Immense difficulties arise when five nations decide to co-operate closely in peacetime in political, economic, and military spheres. Close co-operation should be far easier to achieve quickly in the military sphere than in the economic sphere. But to achieve progress in the military sphere, political direction and decisions are an essential prerequisite. Lack of direction, and political indecision or hesitation, are fatal to progress of any kind.

The real difficulties begin when generalities are left behind and concrete measures have to be taken. It is one thing to agree politically to co-operate in a pact or union; it is quite another thing, and far more difficult, to implement that decision by practical measures. There must come a time when principles have actually to be applied in practice. That is the time when those responsible for taking practical measures need help and sympathetic guidance from their political chiefs. Political decisions will be required on points which were unforeseen before the detailed examination of the problem began; these decisions need to be given promptly when asked for.

Therefore, the first and great requirement is clear political direction, and political decisions without delay when asked for.

2. RAPID AND PRECISE DECISIONS FROM A SUPERIOR BODY.—From a purely military point of view, there are grave disadvantages in the committee system of management. In all but the highest levels, the military custom is to examine a problem in all its aspects, and then for a commander to give a decision. Occasionally it is necessary to seek a decision or ruling from a senior authority. Once the decision is given, the staff machinery can go straight into action to achieve the desired object. Relative to this, an international committee system is complex, cumbersome, and slow.

It has been decided that for planning purposes we are to work on the assumption that *in wartime* there will be a Supreme Commander with three Commanders in Chief under him. But in peacetime, the present committee system has got to be made to work in our command organization.

The Western Europe Commanders in Chief Organization is an international and inter-service set-up. It is essential that there should be a superior body which is capable of producing rapid and very precise decisions when required. When, for example, the Western Europe Commanders in Chief Committee find that they cannot agree on any given matter, the subject is referred to the Western Union Chiefs of Staff Committee (and ultimately, if necessary, to the Western Union Defense Ministers) for decision. Such cases must be dealt with rapidly, and the decision given must be definite, very clearly defined, and final. Once given, the decision must be accepted loyally by all concerned. Only in this way can efficiency and confidence be maintained.

3. THE NEED TO BE INTERNATIONAL.—For reasons which should now be clear, I believe it to be an essential condition for success that the members of the Western Europe Commanders in Chief Organization must hold the status of international servants. They are required to consider their problems from an objective and over-all point of view, and have to be careful to avoid any tendency to be influenced by local national arguments in their countries of birth. It is thus of first importance that they should be relieved of any purely national appointment. Any attempt to combine responsible international status with local national responsibility undermines confidence in the impartial character of the Organization and, at the same time, causes confusion in the hierarchy and armed forces of the country concerned.

Every problem must be viewed through European eyes in the first instance. If a closer view is needed, it must be through an international telescope—and through the right end of it; any attempt to use a national telescope can never be permitted.

The international spirit must grow and develop; if it does not we cannot succeed. There is no place in our Organization for anyone who says: "Only a French officer can do this"; or "only a British officer can do that." And, similarly, for other nations. There can be only one qualification for any task and that is "ability to do the job." The best man must be chosen in every case and it should not matter in the least what his nationality is. The approach to every problem must be truly international.

A good safe way to be truly international is never to see ministers of your own nation, unless they themselves ask to see you. I frequently visit the ministers of the Continental nations of the Western Union. In order to have a clear conscience I never visit British ministers. And, very wisely and quite rightly, British ministers never ask to see me. I would like to see this procedure adopted.

4. POOLING OF SOVEREIGNTY.—When nations decide to co-operate for a common cause, they will never get real

and effective co-operation unless each is prepared to suffer, if necessary, some small loss of sovereignty. It is quite illogical for nations to agree on a common cause and then not to pool their sovereignty in order to pursue that cause, when it may well be a matter of life and death to them. Hesitation, timidity, and a failure to face facts in this respect, might well mean disaster for everyone.

5. POOLING OF RESOURCES.—Can any one nation say that through its membership in Western Union it has saved much in money or in manpower in re-shaping its military forces?

If each nation is to continue to strive for self-sufficiency in defense, what value will it get from the Western Union? No nation in the Western Union is strong enough *by itself* to deter an aggressor, let alone to stand up against attack; the defense of its homelands can no longer be considered in isolation. The territories of the Western Union must be regarded as *one comprehensive whole.* This implies a joint system of defense and the building up of united strength. This, in turn, implies the pooling of resources. The pooling of resources may involve certain risks in that some one ally might fail; but the risks must be taken. The only alternative is for each nation to be self-sufficient in defense; this is clearly impossible in any case.

Unless a nation is prepared to accept the risks involved in a joint system of defense, the benefits of a defensive alliance will be greatly lessened. There is no place in our Organization for the reluctant partner.

6. CONFIDENCE AND MUTUAL TRUST.—It is essential that each nation should have faith in the sincerity, good intentions, and wholehearted co-operation of the others. Once a nation conceals things, or is not frank and open, or hesitates when it becomes necessary to take practical measures to implement agreed principles, then suspicion creeps in; and once that happens the results may be catastrophic.

The only sound Allied motto is: "One for all, and all for one." There must be no ambiguity. We must all mean what we say, and say what we mean.

7. PROPER LINGUISTIC QUALIFICATIONS.—It has become very apparent that the members of the working staffs must have adequate linguistic qualifications to enable them to work together with sympathy and understanding. We have learned by experience that differences of language can lead to great misunderstandings, which sometimes require considerable efforts to resolve. Two languages are used, English and French.

In my view, it is essential that nations should set and demand a high standard in their interpretership examinations. This is not done at present in all cases.

8. A FINAL REQUIREMENT.—A final requirement, equal in importance to any of the others, is that we must all have a very clear realization of the truth contained in the old proverb: "God helps those who help themselves."

We must not develop a tendency to look across the Atlantic and say we cannot do this, or we cannot do that, unless America will *first* do something else. *We* must all act first and must get on with the job. Our friends will rally to our support in their own good time, and will do so with greater eagerness when they see we are taking every possible step to help ourselves.

Conclusion

In conclusion, I would like to say again that I am full of hope and optimism about the future of Western Union Defense. Our triumphant cry should be: "Strength through Unity."

And this strength can easily be obtained given an international outlook, faith in the task, and wholehearted unselfish co-operation—all leading to unity.

French Air Power

Digested by the MILITARY REVIEW from an article by William Green in "Canadian Aviation" (Canada) December 1949.

MANY writers have noted the French Air Force's complete absence from the battlefield during the crucial period of May-June 1940. Others have described French pilots running away from their squadrons in ambulances, of handfuls of obsolete French fighters holding out to the last, and of a complete lack of airworthy bombers. How much of this is true? Was the French Air Force really so weak on 3 September 1939 as has often been stated? Authorities on the subject still disagree.

I do not intend to weigh the pro and con of the many answers that have been put to these questions. Indeed, many readers will have formed their own opinions long ago, correct or otherwise. But a brief outline of the difficulties with which the French Air Force had to contend prior to the War will serve to provide a better understanding of the attitude of the French toward their Air Force and the steps that are being taken to ensure that the modern French Air Force will be a more efficient and a better-equipped air arm than at any time between 1919 and 1939.

Fall From Power

At the end of World War I, France possessed the finest Air Force on the continent of Europe—which, in those days, meant the finest Air Force in the world—but between the wars, its strength and efficiency waned until it was no longer a first-class air arm.

The reasons for this decline were manifold. During a period when political instability and economic uncertainty were the dominant factors in France, the Air Force was neglected. Thus, by 1933, when the disarmament conference finally broke down and the armaments race began, the French Air Force was no longer a factor to be reckoned with in the dangerous game of power politics.

In that year, an independent Air Force was created in an attempt to re-establish France's former predominant position in European skies, but unfortunately political instability had a disastrous effect. A series of governments rose and fell in quick succession, political scandals were rife, and the people became successively cynical, disillusioned and, eventually, apathetic. The frequent changes of policy by a succession of air ministers combined with the differences of opinion among the French air staff made the development of new aircraft types almost impossible.

Allied to the difficulties occasioned by the politicians and the air staff was the chaotic state of the French aircraft industry. Whereas in 1939 the productive capacity of French factories was estimated at 250 aircraft a month, the actual output amounted to something between 30 percent and 35 percent of this.

Various figures have been put forward as to the estimated strength of the French Air Force in Europe at the time of the German *blitzkrieg*. These have ranged from 3,000 to 5,000 operational and reserve aircraft. A very high percentage of the equipment was obsolete, and either estimate compared unfavorably with the *Luftwaffe* strength of some 6,800 modern first-line aircraft and 8,900 second-line aircraft.

It has been claimed that the morale of French aircrews was so low that, when faced with the full strength of the *Luftwaffe*, the pilots left the battlefield without trying to intercept the enemy or slow down the advancing enemy columns. However, there is much evidence to show that the French airmen fought well. The ma-

jority of French aircraft were lost while strafing the advancing enemy columns at low level, and reliable estimates give the figure of enemy aircraft destroyed by French fighters at approximately 1,000.

After the fall of France, many French aircrews found their way to Allied territory and these men, together with French volunteers from all over the world, were formed into Free French Air Force units. By the time of the invasion of the French coastline by Allied forces, the Free French Air Force was of considerable strength and had recovered its fourth position among the air forces of the Allied nations.

Postwar Progress

Since the end of the War, the French Air Force has been completely reorganized, but the main factor upon which the future of the air force depends is the French aircraft industry. The two are inextricably interwoven for it is intended that ultimately the Air Force will be equipped with combat aircraft manufactured by this industry. Thus, it is essential that the industry should be in a healthy state —which can hardly be said at the present time.

As it stands at the moment, the French Air Force comprises a miscellany of British, American, and German aircraft, the former being supplied to the French during the closing stages of the War and the latter having been on the production lines in French factories at the time of the liberation. A small number of nationally designed aircraft (mostly in the communications and training categories) are also in service.

Administration and Organization

Service aviation in France is divided into two forces, the Air Force and the Naval Air Arm. The Air Force is organized territorially into five aerial regions, four being in Metropolitan France and the other in North Africa. The latter region consists of three subregions, Algeria, Tunisia, and Morocco. The territories of the French Union are divided into different colonial headquarters; West Africa, Equatorial Africa, Madagascar, and Indo-China. All of these areas are responsible to the central administration under the leadership of the Air Force Chief of Staff.

Airfields are numerous but still ill-equipped, Allied and enemy bombing having devastated most installations. Owing to financial restrictions, the construction agencies have a complex problem to solve, a problem that is becoming increasingly difficult with the advent of jet combat aircraft in service with the Air Force.

Fighter units are stationed in the French sector of Germany, North Africa, and the Far East, and consist of seven groups, each group comprising two squadrons of aircraft and their usual ancillary services. All bombing groups, of which there are 12, are temporarily engaged in transportation duties and are based in France and all the territories of the French Union. The 16 liaison squadrons also are dispersed throughout French territories.

Naturally, during recent years, the most important activity has been the training of new personnel. The training organization in Metropolitan France includes cadet schools at various points, primary and advanced flying training schools at Salon de Provence and Cognac, an operational fighter training school at Meknes, and a multimotor flying training school at Avord (and Marrakesh in North Africa). Navigators are trained at Cazaux, radio operators at Pau, and specialized ground staff (airframe and engine mechanics, radar operators, etc.) are trained at Rochefort, Pau, Saintes, Toulouse, Auxerre, Antibes, and Lyon.

Flying Equipment

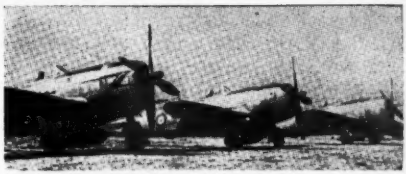
The heterogeneous collection of aircraft

in service with the Air Force must present a very formidable spare parts problem. With the exception of training aircraft, the French have adopted the policy of doing with the aircraft that they possessed at the end of the War until really modern aircraft are available.

This policy of dispensing with interim types has been dictated by a need for economy and the consideration that the production of such types might hamper the development and production of modern types comparable to their foreign contemporaries. However, the development of these "modern" types is taking far longer than was originally foreseen and therefore it has been decided to order the deHavilland *Vampire*. Thus, a production order has been placed with the SNCA du Sud-Est and, in the meantime, the French Air Force has taken delivery of small quantities of *Vampires* from British stocks and production in order to commence conversion courses with the least possible delay and build up squadron strength while production is being organized.

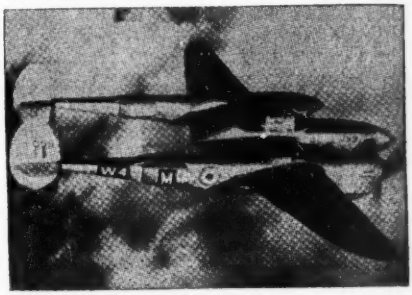
With the exception of the *Vampires*, fighter squadrons are equipped with wartime piston-engined fighters such as the *Thunderbolt*, the *Mustang*, the *Kingcobra*, the *Lightning*, the *Spitfire*, and the *Mosquito*. An order has been placed for the very promising Dassault *MD450 Ouragan* fighter, and it is estimated that the first production deliveries of this type and the French-built *Vampire* will be made early in 1950.

The bomber and transport units at present use *Halifaxes*, *Marauders*, *Mitchells*, *Dakotas*, and Junkers *Ju 52/3Ms*. It is doubtful if these will be replaced for a considerable time, although as regards transports, the *Nord 2500* is considered as a likely replacement. The liaison units use the prewar *Loire 45*, the Cauldron *Goeland*, the *SO 95*, the *NC701 Martinet* (German *Siebel Si 204*),

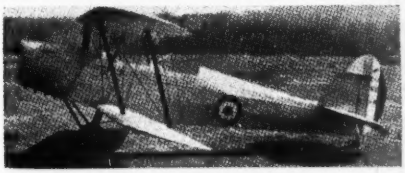


Part of the French Air Force fighter groups are equipped with F-47s as above.

Above, a *Wellington* bomber of the French Naval Air Service reconnaissance units.



Above, a Lockheed *P-38 Lightning* reconnaissance fighter of the French Air Force.



Above, the *Stampe SV4C* primary training plane; below, the *NC702* light transport.

the Morane *502* (Fieseler *Fi 156K Storch*), and the *Nord 1000* and *1100* (Messerschmitt *Me 108* and *208* respectively).

Training squadrons employ more modern equipment, most of which is of French construction. Primary training squadrons use the Belgian-designed *Stampe SV 4*, which is built by the SNCA du Nord under License. Advanced training units employ the Morane *MS 475* and the *SIPA S 11* (*Arade Ar 396*), and twin-engined, radio and navigational instructional units use the *Avro Anson*.

Naval Aviation

Naval flying is administered by the Ministry of Marine but certain units (such as air/sea rescue squadrons) come under the partial control of the Air Force. Various land bases are used by French naval squadrons and two aircraft carriers are in service, the light escort carrier *Dixmude* (formerly *HMS Biter*) and the *Arromanches* (formerly *HMS Colossus* and on loan to the French for 5 years). In addition, the 22-year-old carrier *Bearn* is still in service but is classified as an aircraft transport.

Present equipment includes the *Seafire Mk. 3* fighter, the Junkers *Ju 188*, Vickers-Armstrongs *Wellington* land-based reconnaissance bombers, the *SE 161* Languedoc transport, and various trainers, such as the Morane *MS 472*, the *SO 94M* and the *SCAN 20*.

No orders have been placed yet for a shipboard jet fighter though various types are under development. The first Nord *Noroit* reconnaissance-bomber amphibians have now been delivered and will supplement the Short *Sunderlands* at present used for this duty.

There can be little doubt that France has learned much from the experience that she has gained during the War, and that she is striving to create as powerful an air arm as the dictates of her economy will allow and one that will play an important part in the Atlantic Pact.

A Settlement With Japan

Digested by the MILITARY REVIEW from an article by Cyril Falls in "The Illustrated London News" (Great Britain) 3 December 1949.

THERE are fewer obstacles in the way of a peace treaty with Japan than in the case of Germany. That which has proved the most formidable in Germany, the presence of the occupying forces of rival powers, former allies and partners now hostile, does not exist in Japan. There have, nevertheless, been great difficulties to overcome.

Russia claims, in virtue of wartime agreements, a say in the settlement, and that it should be carried out by the four powers which, in her view, bore the main burden of the war against Japan: Soviet Russia, the United States, the United Kingdom, and China. No impartial observer can fail to be astonished at the claim of Russia to have borne a burden in the Japanese war comparable to that of the other three, or, for that matter, of other nations which were engaged throughout, such as Australia and the Netherlands. It is true that Russia, having finally denounced her treaty with Japan, attacked her on the Asiatic continent in great force and won a great success. This intervention was, however, delayed until Japan was reeling in defeat, and the Russian armies met with hardly any opposition in a campaign to be measured by days, whereas those of the others were measured by years.

Still, an agreement is an agreement. At Yalta, Russian aid seemed highly important and worth paying for. Russia did not fail to fulfill her promise of action. And though Australia has indignantly refused to accept the principle of a four-power settlement, the main objection is that this would involve the veto, that instrument which in Russian hands has regularly been used to block all progress whenever there has been a majority against the policy advocated by the Soviet. In this case, too, communist China would presumably take the place of the "China" to which Russia accords a place among the four powers, though the former is not the China which bore the burden of the war against Japan.

Other National Concerns

If the United States and the United Kingdom were willing to accept the risks of a settlement with Japan on the lines proposed by Russia—though there is no reason to suppose that they are in any case—they would still have to pause in view of the heavy responsibility they carry in relation to other states. The Philippines and Australia are even more directly concerned with the future of Japan than the United States and the United Kingdom. Finally, the situation has greatly changed since the War. Russia's hostility to the United States has been clearly expressed, and all the most strategically important territory of China has fallen under communist control.

It is this last event, no doubt, which has given a new urgency to the work of the planners and led to the recent discussion of the subject by Mr. Bevin and Mr. Acheson. There is a communist party in Japan itself. It is difficult to say whether it is growing in strength or merely taking advantage of opportunities to make itself more prominent, but it appears to be fairly strong. The influence of the communist victories in China has been felt in Japan, and direct contact between communists in the two countries is not an impossibility.

In any case, General MacArthur long ago set in motion a process of giving more and more discretion, little by little, to the Japanese as regards their own national affairs. The absolute control which he has hitherto held in his hands has been a valuable reserve, but the process is one which must logically continue and must at some point be regularized by a general settlement. The United Kingdom would be glad of one, if for no other reason than that it would facilitate trade relations. These are amazingly complex under the present regulations, and some commercial firms which have in the past dealt extensively with Japan, have expressed anxiety lest pushing American rivals should take advantage of American control to drive them finally out of Japanese markets.

So we reach the conclusion that a settlement is desirable and that in all probability it will have to be made without Russian participation. This appears to carry us a long way, but it does not mean that all is plain sailing. Those who negotiate the peace treaty—presuming that this, and not merely a statute of occupation, is the goal—will indeed have a complex task before them. The guarantee of good behavior of the Japanese rests on the American forces of occupation. This is the case not only because Japan is difficult to observe, more difficult than Germany would be if both were freed from occupation, but also because she is difficult for Europeans to understand, far more difficult than Germany.

Japanese Democracy

Some observers have come to the conclusion that the kind of democracy fostered in Japan by General MacArthur and his political advisers is no more than skin deep, that the Japanese are not serious

in professing it, and that they do not even completely understand what they are supposed to be professing. Some go further and assert that the American authorities have not succeeded in fathoming Japanese ideas and motives. Certain journalists who have been stationed in Japan have been inclined to mock at the system of General MacArthur and to suggest that he is living in a world of make-believe, created by himself and fostered by the Japanese.

In his public statements, he, himself, has always expressed confidence that he is on the right track, and generally succeeding in his aims. It must be left for time to show who is right in this matter.

We should beware, however, of insisting too much on the impenetrability of the Japanese mind to Europeans and people whose thinking is European in type. The Americans have been sitting in Japan for over 4 years. They have at their disposal experts in its language, its literature, its history, and its philosophy. They have a thorough intelligence service. Whatever be the extent to which they have made mental and spiritual contact with the Japanese people as a whole, there can be no question that they have done so in the case of a large number of representative Japanese. It is fashionable, because it effectively emphasizes the antithesis between the two races, to pretend that there can be no full process of thought transference between them, but in practice one human mind always becomes in time open to another. I believe we may therefore take it for granted that General MacArthur has not been simply groping in the dark, and that he is doing at least part of what he is trying to do. It may be easier to dispute the wisdom of his proceedings, but I, for one, should be sorry to deny it without more evidence that his critics have produced.

If, however, it be granted that General MacArthur has created a Japanese democracy, it remains to be considered how strong it is and what dangers it has to face. The thing itself is so strange to the country, and there has been so little time for its assimilation, that it is likely to be frail. There can be no doubt what its enemies are, or that they are powerful. On the one hand is the communist party which may be expected to be at least as vigorous and astute as in China. On the other hand is an equally formidable foe, the ruthless elements who acted on the assumption that Japan had a divine mission in the world, and that any action, even the murder of Japanese ministers, was justified where opposition was encountered.

Allowing for the differences between Japan and Germany, these people, mostly organized in secret societies, bore a strong resemblance to the Nazis. They were, in fact, seldom descendants of the Samurai, but for the most part had sprung from the lower middle classes and junior officers of the Army. It should be of interest to us in this country that the redistribution of wealth and the nationalization of the main industries found a part in their program.

Protection for Democracy

Sandwiched between such foes, who differ little in technique—the communists look the honester and may be the less savage—Japanese democracy, if it is to survive, will require protection for some time. I do not think it can effectively be protected from a distance. If not, there must be a continuance of the occupation even if there is a peace treaty. In any event, the withdrawal of the occupying forces would leave Japan defenseless, since she has been completely disarmed and her arsenals have been systematically destroyed, and the risks of that are obvious. It can therefore be accepted that the American forces will stay, under the terms of any settlement reached, though it may be possible to reduce them.

The other main difficulty to be met is that of satisfying the Pacific states. Australia, feeling that her very existence as a nation was threatened by Japan in the last War, will naturally be watchfull and urgent in her demands of safeguards. It will take Mr. Acheson some time to find a solution to which she will be prepared to give her blessing. But from every point of view, the time seems to have come to go forward.

Perhaps it is best not to look too far ahead politically, and straining for a view of more than a few years may be a waste of energy required for more immediate affairs. China is in violent transition, but it may be said that most of Asia is in unusually rapid transition. No one can tell what is going to happen in these swarming, uneasy, and excited communities. It was Japan, above all, that stirred them into their feverish political activity, and, in the long run, her action in doing so may be found to have exerted a more powerful influence upon history than the immediate and direct results of the War. The distant future of Japan, herself, is particularly obscure. This, however, would furnish no excuse for inertia. States can control destiny to a certain degree, and they need seldom to be surprised by it. Prudent and steady action suited to the moment and taking as must account of the future as can reasonably be foretold, with a readiness to make adjustments for fresh developments, represents the only sound policy which can be pursued in the Far East.

Obscure Orders

Translated and digested by the MILITARY REVIEW from an article by Major General Gunnar Berggren in "Ny Militar Tidskrift" (Sweden) No. 5, 1949.

ACCORDING to the Swedish Army Field Regulations and Troop Branch Regulations, a main defensive position or portions thereof may not be abandoned without orders. Every formation must stubbornly defend its sector. The lowest formations must maintain their combat positions, if ordered to do so, even in case of a counterattack. If the enemy breaks into these positions, he must be stopped by fire and hand-to-hand fighting. If the enemy succeeds in taking part of the position, the remaining portion is to be defended to the last man.

The regulations represent the final result of more than 20 years of discussion of certain, long-contested lessons learned during World War I. They constitute a definite contrast with the German method of yielding, which was so evident in the strategic and tactical reverses of the final phase of that war.

The regulations—especially from the Swedish point of view, due to the Army's partially militia-like character—are simple and easy to understand. From the tactical point of view, they are particularly significant. Toleration of any sort of softening in applying these regulations could lead to disaster. In such cases, measures as rigorous as martial law permits should be taken to prevent any vacillation. The ability of both higher and lower commanders to stand up under the great strains of defensive combat may rest wholly on their being able to depend on subordinate commanders and formations who wholeheartedly do their duty. In the opposite case, chaos threatens. Losses would be many times greater than normally would occur if military obedience were not strictly maintained according to the regulations.

On the basis of these considerations,

certain instructions issued during World War II arouse considerable misgivings. Secret regulations of both a general and special nature render open discussion of the matter somewhat difficult, but any interested person should be able to follow the following lines of reason without difficulty, even though references to sources, as a rule, must be avoided.

According to the instructions referred to above, an order such as "Defend stubbornly A-B-C-D, the main line of resistance," may now only be used when the defense of a continuous position is intended. There may be several reasons for the restriction in the use of this order. The idea may be to indicate that stubborn defense is to be considered only as a necessary evil which rarely harmonizes with the active, brisk, somewhat cavalry-like type of action which otherwise characterizes the instructions. Its purpose may also be to emphasize the fact that the combination of stubborn defense and attack—with the emphasis on the latter—is a form of fighting which, as a rule, ought to be best suited to Swedish units, which are weak in comparison with those employed on the fronts of World War II. In other words, there must be a revival of the classical defense-attack type of action.

Ambiguity

Whatever the motive or motives may have been, the use of the categorical order, "defend stubbornly," has led to a great amount of ambiguity in issuing orders. The frequent uncertainty in the minds of both the commander and the men during field maneuvers, concerning their mission, responsibility, and duty, shows that new regulations ought to be written. This is a defense consideration of great importance.

A schematic example of current order terminology, with appropriate comments, is given in the accompanying sketch to illustrate the above-mentioned problem.

A division commander makes the decision (or receives the order) to prevent the enemy advance from the north between lakes A and T. For this purpose, he details two combat groups, I 1 and I 2, supported by A 1. In addition, he details I 3 as a division reserve for a counterattack, if necessary.

The first paragraph of the order is as follows:

1. I 1 will stubbornly defend Lake A to Lake E, main line of defense B-C-D. Strongpoint at F. Junction with I 2 at G-H.

Comments:

a. The mission of stubborn defense is entirely clear. The regiment shall, if necessary, even if it is surrounded, fight to the last man in that passage between the lakes, unless it receives an order to fall back.

b. The order is obscure as regards the strongpoint at F. Even the lieutenant or the captain, often belonging to the reserves, who receives this order and who, perhaps, has succeeded in grasping the importance of the provisory modifications of and additions to the instructions found in the general order, will not understand their missions. The regulations are not clear with regard to the term "strong point" used in the order. Expressions such as, "if the strong point fails or is evacuated" and "the fire system in front of the front line" indicate strongly that the fighting has, as its object, stubborn defense only, not limited defense. Unless the order is understood in this way, the division's whole front may give way. The order should, therefore, read: "You will organize and stubbornly defend a strong point at F."

The second and third points of the division order may be assumed to possess the following:

2. I 2 will prevent the enemy from advancing between G-H and Lake T. Strong point at I and J. Resistance area at M.

For counterattack, at least one battalion.

3. I 3 Division Reserve at R will prepare counterattack south of Lake E in the direction of E and past S, in a northern or northeasterly direction.

Comments:

c. The breadth of the front prevents making a continuous, stubborn defense. Therefore, the commanding officer of I 2 is given considerable freedom of operation within the framework of the mission of preventing the enemy from advancing into his area. In order to have a certain degree of unity in the defense system, the division commander, however, prescribes the organization of two strong points and one resistance area. So far, all is well. The division commander believes that he can now probably count on more than a reinforced company resisting to the death, an enemy advance over the eastern route, and that two formations, one back of the other, will prevent the enemy from using the western route.

Obscure Orders

For the reasons given above in comment *b*, it is extremely uncertain, however, that the recipients of the division order will really understand the intentions of the division commander. The form of the order is just as obscure as is its basis in the regulations. For example, one will not usually hold the commanders of strong points juridically responsible for evacuating their strong points after their formations have resisted the enemy to the best of their ability and have suffered heavy losses. The enemy will not be stopped by "the holding fire system ahead of the front line" but will threaten penetration, encirclement, and annihilation. Only when it is clearly stated that the strong points are to be defended at all costs has a proper basis been created for the requisite moral and tactical support required by the uncertain and tactically untrained person.

d. The unclear directives mentioned are more plainly evident when one considers the usual variations in the orders given for the resistance area at M, defended, for example, by the reinforced 1st Battalion. A characteristic terminology is as follows:

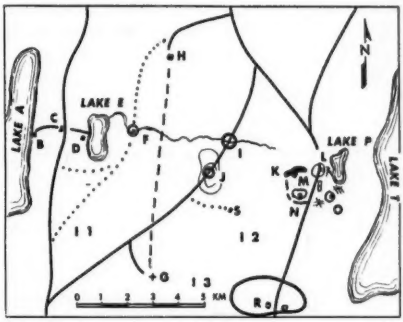
4th Company strong point L. Resistance area as far as lake.

1st Company will stubbornly defend K; boundaries . . .

3d Company will prevent enemy from advancing past line N-O with strong point at O. Will stubbornly defend hill at N.

Headquarters Company will organize and defend resistance area O to south point of Lake P.

2d Company, Battalion Reserve, will defend N to K in case of counterattack in resistance area.



Here the expressions "strong point" and "stubbornly defend" appear clearly contrasted to one another. As a third variation, we find the expression "defend." Further, one company receives the curt order: "resistance area," another, "organize and defend the resistance area." What is the difference? It is hard to tell.

The orders which have been criticized here were actually given during World War II in connection with a period which was in many respects a trying one for Sweden. Owing to this fact, shortcomings may partly be excused. The reason can also be advanced that there has been no revision during the last 5 or 6 years. It could also be asserted against the above

criticism that, on the one hand, it was in the main directed against matters of trifling importance and that, on the other hand, it unduly emphasized the ambiguous features of the particular orders. Portions of regulations detached from their context might also be presented as counter-arguments.

Need for Clarity

It would, however, be very dangerous from the point of view of defense to underestimate the importance of the criticism. It is not a matter of trifling importance when our generally unschooled troop commanders know or do not know whether it is their duty to remain at their posts with their troops or whether they may withdraw when threatened with annihilation. It is also of importance that the basic tactical regulations be so worded that they can be understood by the average commander who usually will not have had the proper training.

Before time has been found for a general revision of the instructions dealt with here, it would seem best that the restrictions mentioned at the beginning with regard to the order "defend stubbornly" should be nullified, and that a regulation should be issued directing that resistance areas, strong points, and trenches should be "stubbornly defended" unless otherwise ordered.

For the sake of security, this ought to be stated in every order relative to defense action. As is well known, it requires years for changes in regulations to penetrate down through a national defense army.

Try to give clear, concise, and intelligent instructions. A soldier cannot read your mind. Share the responsibility for your orders and give them to the soldier to execute.

Revista Militar (Bolivia)

The conclusive reason for military assistance to the free nations of Europe is that it materially enhances the prospects for peace. The greatest single achievement leading to the creation of conditions that would assure lasting peace in the world would be the reestablishment in Europe of a group of strong, free, virile and progressive states, living together in harmony and cooperating closely in political, economic and social matters for the good of their own people and the people of the world. This kind of Europe, no longer dependent on the United States or fearful of attack from the East, would be a stabilizing force with great influence in world affairs.

Lieutenant General Walter Bedell Smith

The American people realize that the first prize for any aggressor in the world today might be Europe, with its industrial potential and its market for goods. So they have reaffirmed in economic aid, and by political tie, that the Western Europe which we have twice defended is linked with this continent in peace, and for protection.

General Omar N. Bradley

That Next War

Digested by the MILITARY REVIEW from an article by J. M. Spaight in "The Royal Air Force Quarterly" (Great Britain) July 1949.

Defense

THAT next war—to nine people out of ten that means one thing and one thing only: a war between the Atlantic States and the Soviet Union. On land, the latter, the aggressor, will have the advantage, and the first task of the defense will be to prevent the Red Army from overrunning all Western Europe. The Western strategists in their plans can hardly fail to take account of the fact that two great rivers, more or less parallel, run north and south in the west and center of Germany. Are they rivers of destiny? Did Nature place them there so that in full time they should serve to save civilization?

They are the Rhine and the Elbe. Each is a formidable water barrier. Each is a potential antitank ditch cutting the path of the invader from the east.

Western strategy, it is reliably reported, is based on holding the line of the Rhine from Switzerland to the North Sea. The Elbe would be an alternative choice, but the probability is that it would be overrun before it could be manned in adequate strength. There would be some breathing space before the Rhine was menaced. What strength would be needed for its defense?

A force of 50 motorized and 10 armored divisions was suggested to be necessary in an agency report from France in January 1949. Of these, 35 motorized and 5 armored divisions would be furnished by France. Such a contribution would clearly be beyond France's capacity at present. A more recent estimate of 20 mobile divisions is much more realistic. No more could be found, in all probability, by the European parties to the Atlantic Pact for some time to come.

Later, no doubt, American forces would be added, but their presence could not be counted upon in time to meet the first onset. The Atlantic Pact, in Article 5, preserves the right of Congress to declare war; that is the effect of the Article, though it is so phrased as not to alarm unduly the European parties to the Pact, always apprehensive about a possible delay in the arrival of reinforcements from America. That such assistance will materialize is not to be doubted, but to assume that it will be *at once* forthcoming would be unwarranted. The first and pressing need of the situation will be to hold the barrier of the Rhine until the immense strength of the Western Hemisphere is available to stiffen the defense.

The strain on the line could be eased if a leaf were taken from the book which records the operations of the Anglo-American armies and air forces in 1944-1945. General Eisenhower bore testimony in his report to the vital contribution to the success of his campaign which was made by the great air assault on the enemy's railway network. The destruction of the bridges over the Loire and the Seine was of especial importance.

There are many bridges over the Elbe, from the five at Dresden to the four at Hamburg, where the river is bridged for the last time. If those crossings were made impassable, it would be virtually impossible for the Russians to sustain a great attack on the Rhine. It should be within the capacity of the Western air forces to write all these bridges off, as well as any pontoons or makeshift bridges that might replace them.

What strength in the air would the Allies need? A figure of 450 to 550 squadrons has been suggested in the House of Lords. Five hundred squadrons would yield about 9,000 first-line aircraft. It was suggested that the United States should provide two-thirds of this force and that the British

share should be one-third, but presumably there would also be contributions from France and the other allies. The United States has considered building up an air force of 70 groups, with a number of special squadrons in addition; behind it stand the National Guard and the Reserve. The result should be a first-line strength of 4,000 to 5,000 aircraft. The Royal Air Force program has not been disclosed, but an intelligent guess would put it at 2,000 first-line aircraft; that would be less than a quarter of our strength in 1945. A further 2,000 ought to be within the capacity of Canada, France, Belgium, Holland and Norway in combination.

The bombers of such a force would be sufficient in numbers to deal with all the Elbe bridges if they concentrated on the work, even if there were some delay in the arrival of the Americans. They would have radar stations to help them in France and the Low Countries and would be able to use the ground homing system which proved so effective in the last stages of the late war. The effect of the destruction of the bridges upon the Red armies' mobility should be disastrous. Their morale would be affected, too, by the thought of these broken bridges behind them.

What of the Red Air Force? Will it not hop over the rivers and land thousands of men on the western side? Judging by the poor showing which the Soviet parachute service, much boosted before the war, made against the Finns in 1939-1940 and the Germans later, one is not inclined to take the tall talk about the proficiency of this arm at its face value. It is true that the Red Air Force is large; possibly it has a first-line strength of 12,000 to 14,000 aircraft; but, unless a miracle has happened, its performances will be inferior to that of the Western air forces. Its radar technique and equipment will probably be below standard and its interceptors are unlikely to be able to waylay the West's night bombers.

Offense

The policy of holding the Rhine and scorching the Elbe, if successful, will save Western Europe from invasion. It will not drive the Soviet armies out of Germany. How will that further task be accomplished? It can only be done, some people think, in the traditional way. The Western Powers—the United States will then be fully mobilized—will have to take the offensive on land and push the Russians back. They will have to carry the Pact on their bayonets. Such is the argument of F. O. Miksche and E. Combaux in their book *War Between Continents*, 1948. They envisage a war in which a Russian tide will sweep westward to the Atlantic seaboard and will recede only when another wave of assault from the west forces it back by degrees to the east. They consider that the first task of the Western strategists must be to recapture all the key positions lost to the enemy. The counterattack would be launched not from the west only; it would strike from the south at the Caucasus, to capture the oil wells there, "the loss of which would call a halt to the Russian war machine."

Note those last words: are they not an admission of the possibility which Messrs. Miksche and Combaux never face squarely, that there may be another and better way of defeating Russia than pushing her back in a series of great land battles to where she belongs? They foresee a war of the traditional pattern, a Russian advance followed by a Russian retreat, an invasion from the east succeeded by an invasion from the west. But if the oil plants of the Caucasus are so vitally important that the loss of them would immobilize Russia's war machine, what need have the Western Powers for a great *land* offensive? A great *air* offensive would give the same result; the oil plants would not have to be captured to be put out of action. A strong land *defense* of the west—yes, that is necessary; we do not want the Russians

sitting just across the Channel and in a position to pelt London with guided missiles at comparatively short range. But the counteroffensive by land—surely that can be dispensed with if we and the Americans bring into play the tremendous instrument of air power which we seem certain to have at our command.

That, at any rate, seems to be the moral of a striking paper by two American writers which appeared, in translation, in *Forces Aériennes Français* for January 1949. The picture which these writers, Joseph and Stewart Alsop, present in their article, "If War Comes," is that of vast Soviet armies trudging painfully across Europe while powerful air missions strike at Russian targets 2 or 3 thousand miles from their bases and destroy all the nerve centers of Russian war strength with atomic bombs. Soviet economy, they point out, is of a distinctly primitive character; that is its weakness. The profitable targets are dispersed in space, but they are not numerous. If twenty Russian towns were to suffer the fate of Hiroshima, the Kremlin would lose 99 percent of its aeronautical production, 60 percent of its steel production, 65 percent of its petrol production, as well as many other essential commodities.

In the industrial group comprising Moscow, Gorki, Tula, Kagan and Yaroslaval, 75 percent of all the automobile industry is concentrated. More than 50 percent of all Russian aeronautical production comes from five towns in the Volga area, Saratov, Koubychev, Astrakhan, Ulyanovsk and Ufa. About 50 percent of Russian oil production is centered in the Baku region. Much more than 50 percent of armored-car production is centralized in the Ural group formed by Sverdlovsk, Magnitogorsk, Chelyabinsk, Chkalov and Uralsk.

The loss of objectives of primary importance in 80 towns alone, they contend, would mean in effect the reduction of the Soviet Union to the condition of a desert, without industrial production or means of transport. It would immobilize the Red Army, which would then become an easy victim for even numerically inferior enemy forces. It could be inflicted by a task force of 300 to 500 American aircraft, they suggest, provided that the necessary bases were available.

Where would the bases be? The writers of the article set forth a list of these, ranging from Ireland to the crucial coast of Arabia and beyond it to the Far East. From Western Europe, it would be possible to attack Moscow, the industrial valleys of the Don and the Dneiper, and the nearer towns of the Urals—Sverdlovsk, Chelyabinsk and Magnitogorsk. All Central Russia and the Ural and Baku regions could be reached from the North African littoral between Tripoli and Suez. The Arab kingdoms and protectorates would furnish a starting point for attacks on the new Siberian centers—Novosibirsk, Stalinsk, Krasnoyarsk and Komorovo, and, again, the Baku and Ural regions. From Japan and Okinawa, the towns of the Amur River and Vladivostok could be reached. There would be no lack of bases from which damaging attacks could be launched against the nerve centers of Russia's war economy. Such is the shape of the war between continents which these writers foresee.

The Atomic Bomb

They assume, it will be seen, that the attack will be made with atomic bombs. Possibly it will. Only one country is at present in a position to use the new weapon—the United States. Will she, in fact, use it? That is the question. There was in that country, we know, a widespread and deep-felt searching of hearts after the destruction of Hiroshima and Nagasaki. Will American consciences approve the writing of another chapter of the tragic story that began in August 1945? They may be steeled to do so by remembering

that Russia and Russia alone, blocked the proposal for the banning of the new projectile and the organization of a system of international inspection designed to make the ban effective. On the head of Russia, it could be argued, would rest the responsibility if her cities suffered the appalling fate which it was in her power to avert.

Their fate would be a swifter one, at least, than that which would be the lot of every free people over whom the Red furry swept. What would our lot be here, in Britain? It would be far worse, the apologists for atomic bombing could urge, than anything we should have had to endure if Germany had won in 1914-1918 or 1939-1945. Our foe was not a semi-Asiatic power then. Defeat for us might mean, they could say, if Bolshevism ran true to form, the pitiless slaughter of our Royal Family, children and all, the massacre of our officer class (as at Katyn), the liquidation of all public men except the communists and their fellow-travellers, the slower but not less brutal murder of millions of political prisoners, trade unionists among them, in concentration camps, the suppression of "leave to live by no man's leave, underneath the law," the enthronement of the gang with the arms. Would not the use of the atomic bomb be lawful, it could be asked, to save us from such a fate? The answer which eminent British Churchmen would give would, it seems, be "Yes." If, as Mr. Churchill has stated, the bomb alone stands between us and a Russian domination of the world, there would be few to challenge its use in a life-or-death struggle against Russian aggression. The situation, it could be argued would be an altogether exceptional one; it would not involve abandonment of the view (which the present writer shares) that atomic warfare should in general be outlawed.

Strategic Air Attack

The atomic bombs would have to be duly delivered to their destination. How would the bombers carrying them fare against the Red fighters? The latter are reputed to be the strongest arm of the Soviet Air Force, the bomber arm of which is much less efficient. The Russian jet fighters would be operating at home and their relatively restricted range would for that reason not be a handicap. The answer to this problem proposed by the American planners is one which depends, it seems, on the time factor, that is, on the date at which the "next war" is likely to come. The United States may by that time have in service a sufficient number of jet bombers for the long-distance operations that will be involved. Alternatively, if the war comes within a couple of years, it would be necessary to rely on piston-engined bombers of the *B-29*, *B-36*, and *B-50* types.

The American jet bombers are likely to have a speed of something more than 500 miles per hour and a range of over 2,000 miles. The Russian interceptors will be faster, probably, by 100 miles per hour. For their protection, it seems, the bombers will be escorted by long-range fighters such as the Curtis *XF-87*, "Blackhawk," which has a range of 2,400 miles and is as large as a medium bomber. If, on the other hand, bombers with piston engines have to be used, the intention is apparently to give them the protection of "parasite" jet fighters such as the tiny McDonnell *XF-85* which has folding wings and can be carried inside a *B-36* bomber, to be released when enemy fighters are encountered.

The range of the piston-engined bombers is considerably greater than that of the jet bombers. The Convair *B-36*, referred to above, has a range of 10,000 miles with a 10,000-pound bomb load; it has six engines. The *B-50* has four engines and its range with a similar load is 5,800 miles, but is better able to protect itself than the *B-36*. The *B-29's* range is about 1,000

miles less than the *B-50's*, with the same load, but is still substantially greater than that of any jet bomber.

It is not unlikely that the air offensive will be promoted to the place which some leaders, and not airmen only, thought that it should have been given in World War II. One of the most striking disclosures in General Eisenhower's *Crusade in Europe* (p. 168) is his record of a private conversation with General Sir Alan Brooke, Chief of the Imperial General Staff, in May 1943. General Brooke, he says, "favored a policy of applying our naval and air strength toward the blockading of Germany and the destruction of its industry but avoiding great land battles on the main fronts. He held the belief that in ground conflict in a land theater we should be at a great disadvantage and would suffer tremendous and useless losses. He wanted to open no larger front than one we could maintain in Italy."

Lord Alan Brooke's argument could be applied with still greater force to the situation which is likely to present itself in the next war, if and when it comes. In a game of hard slugging on land, the Russians will always have the advantage in the shape of their vast reserve of man power. The blood-baths of the Somme and Passchendaele may be repeated on a still more terrible scale. To win the war in the alternative way that is possible, by destroying the sources of Russia's armed strength, is surely preferable to reverting to the method of mass slaughter. The best way of all will be the destruction of the enemy's power of movement.

His nerves of motion can be paralyzed from the air. That was one of the most striking lessons of World War II. It was the grand assault of the Anglo-American air forces on Germany's railways and oil plants during the last year of the war that more than anything else made effective resistance to the invasion of the Reich impossible. Russia is particularly vulnerable at two points—her communications and her oil supplies. Her capacity for offense would be broken if powerful Allied air forces battered her relentlessly at these two points in her armor. They would be still more profitable objectives than her industrial cities; the products of the latter would be useless if they could not be moved to the front. Attacks on transportation and oil yield quicker results, if the bomber offensive against Germany is a true guide, than attacks on urban targets.

Conclusions

Hold a line on the ground, then, from behind that line, launch the counter-offensive by air: that, it is submitted, is the pattern the next war should follow. The air offensive, to be massive and overwhelming, will call for big bombers to smash it home. They, and they alone, will be able to do what has to be done. They can do it. They can break the Red menace. The American, British, and French air forces, with the fighter groups which will be furnished according to reported plans by the Belgium and Dutch air forces, would represent an array of air strength surpassing anything which the Slav States could muster. Air power will be the West's strong hand. Let the West play it for all it is worth. Do not let us be deceived by tales of push-button warfare, of guided missiles, of aerial robots to which the *V-1s* and *V-2s* of the last war were but as children's toys. The day of the manned bomber is not past. Let us not be in too great a hurry to write it off as a back-number. Its most important work may still remain to be done.

The Fog of War

Digested by the MILITARY REVIEW from an article by Major General C. Vokes in the "Canadian Army Journal" (Canada) October 1949.

IN THE prewar period of one's service, during tactical instruction, one learned that there was an inherent factor in battle known as the "fog of war." It was extremely difficult to understand why it should exist in view of the several different channels of communication available from front to rear. It never occurred in the tactical exercises or maneuvers which one attended during this pre-battle period, and although oftentimes attempts were made to simulate "the fog," they were unreal.

One cannot fully appreciate the "fog of war" until one has experienced it in battle. One found that it was, in fact, an ever-present characteristic of the atmosphere of battle. It affects every commander in more or less degree and its density and duration is greater and longer, the higher the headquarters.

A possible definition of this characteristic of battle might be: Piecing together a true picture of the exact situation during the early stages of battle, or during its heat, is similar to an attempt to locate oneself in a fog.

In spite of every precaution to ensure a continuous flow of information from front to rear, the confusion of battle resulted in a dearth of reports or conflicting reports. To the experienced, this is understandable and is attributed to:

1. The reluctance of subordinate commanders to report success or failure until confirmed. The more experienced the commander the greater his reluctance. It is a nasty experience to report success and have to retract later. One only does it once. No one likes to report failure in case it may be only temporary.

2. The effect of enemy fire on the combat elements. Self-preservation may be temporarily of the utmost importance. The means of transmitting information may be knocked out. In the case of wireless, the set may have developed trouble of a temporary nature, etc.

It is, therefore, important to the student of tactics in his study of past battles to appreciate that more often than not the decisions of the commanders concerned were made in the fog of war. It is very easy to criticize decisions made in a post-battle analysis, but it is extremely difficult to realize the atmosphere in which they were made and the need for making decisions based on scanty information. Until the fog disappears—and it is at its worst during the period immediately following H-hour—successful decisions are oftentimes a matter of good fortune. At the same time, it is a cardinal feature of battle that he who hesitates is lost, and a bold decision (though perhaps not a perfect one) followed through with drive may spell the differences between success and failure.

The fog of war is never eliminated, but its intensity can be immeasurably reduced by:

1. Thorough preparation before battle is commenced.
2. Thorough training to make each link in the chain of command "information conscious"; and
3. Personal touch.

Thorough Preparation

There should be no need to emphasize thorough preparation for battle. Calculated risks are often a necessary part of a plan, but nothing avoidable should be left to chance. Every possible arrangement must be checked to reduce the inevitable fog. It is particularly essential in all preparation for battle that every

officer and man in the combat elements should know the over-all plan and intention of the senior battle commander, be he army, corps or divisional commander. In this respect, it is my opinion that the one intention should serve throughout the chain of command. Parochial intentions of subordinate formations are merely the means to an end and are really the method by which they hope to achieve the over-all intention. It must always be borne in mind that it is the initiative and thrust of the combat elements which, in the final analysis, wins the battle. Thus, if officers and men are to have full power to develop initiative, they must always know the battle aim. Just as "time spent in reconnaissance is seldom wasted," so "time spent in briefing is never wasted."

"Information Conscious"

To make each link in the chain of command "information conscious" should be emphasized in all our tactical training. We are too often inclined to forget that the attrition rate for key personnel such as junior leaders and signallers is heavy in battle. Every combat soldier, no matter what his rank, must, therefore, be trained in how to transmit battle information and to use the means for its transmission. This applies particularly to our infantry training in wireless, which lags far behind that of the Armored Corps, even making allowances for the difference in type and carriage of the wireless sets employed by each of these arms.

Without too much digression, a battle message should be short and terse, describing "when," "where," and "what," whether the information be positive or negative. Messages giving negative information are often of as much importance as those giving positive. For instance, if nothing is happening to impede the advance of any battle element, it may well be an indication that this element has struck a weak spot in the enemy defenses which it may be desirable to exploit with reserves.

Personal Touch

It is seldom, if ever, possible in modern war to find a place on a battlefield from which a brigade or higher commander can control the battle by personal observation. In the days when men fought in a solid phalanx and it was not customary to fire from a prone position, the course of events could be easily described from some central point of observation. Thus, decisions could be made on the trend in events registered by the eye of the commander. The exceptions, nowadays, may occur in the case where armored forces are employed, but they will be rare. Hence, control above unit level in modern battle is somewhat remote and entirely dependent on the transmission of information from front to rear, and through the personal touch of the commander concerned. This, unlike days of yore, is not accomplished by stationing oneself at a point of observation in the center of the battlefield, but by quick visits to forward headquarters. The ease and ability to make these quick visits is only possible where headquarters are sited well forward. It is unwise, however, for a unit, brigade, or divisional commander to be too long absent from his headquarters, which is the nodal point of communications in his command.

One might add that nothing irritates a subordinate headquarters more than to be pressed for information by a senior headquarters. At the same time, such pressure should be unnecessary if the subordinate commander and his staff are "information conscious." If battle information is not coming in satisfactorily, it is best to go forward and seek it out, rather than press your subordinate commander and his staff, whose whole attention is focused on their battle.

In conclusion, therefore, to dispel the fog of war by all possible means must be the aim of every commander. We can ac-

complish much towards this end if our training is objective and realistic. A constant flow of battle information is the only possible way in which the fog can be dispelled. Even if the fog can be reclassified as a mist, we will have done much to ease the strain of command in battle by enhancing the opportunity to make decisions based on accurate information.

Two German-Russian Tank Battles

Translated and digested by the MILITARY REVIEW from an article by General Rocafort in "Informations Militaires" (France) 10 May 1949.

A NUMBER of the battles fought in France, the Balkans, and Russia during World War II, particularly those in which the Germans held the initiative, were obviously battles of annihilation, planned to achieve decisive results. After each of these battles, the major part of the attacked forces was so completely shattered that the surviving elements lost their offensive value for many months.

The purpose of these battles was not to stop an enemy or to seize possession of terrain, but to destroy some part of the enemy's forces. Such operations stunned and confused the victims.

In these attacks, the speed and power of the German armored arm, aviation, and infantry moving ahead in series of forced marches, were quite evident. The same was true of the morale and of the fighting spirit of the German troops. Moreover, the high technical qualities of the German command cannot be denied.

As soon as we leave generalities and begin to examine methods of operation, however, there is much obscurity. There is a lack of documents, some of the adversaries have disappeared, and others are unwilling to express themselves. Some interesting facts may be gleaned from newspapers or illustrated periodicals which appeared about the middle of the War, particularly as regards the Russian front. Certain drawings are remarkably well executed and came, obviously, from very competent sources. Such records exist on the operations around Kharkov and Kalatsch in 1942.

The Battle of Kalatsch

The battle of Kalatsch, which lasted from 24 July to 10 August 1942, marked the end of the great mopping-up operations in the Don Bend. Its purpose was to destroy the bridgehead which protected the Kalatsch crossing point, a principle objective since it commanded the railway line and the highway leading to Stalingrad from the west.

This battle was not fought just to push the Russians back across the Don and then attempt a crossing. It was a battle of annihilation intended to capture or destroy totally the enemy's forces in position west of the Don.

The terrain where the battle was fought is characterized by a series of low rises, very long and very broad. These are very easily crossed when the ground is dry. They are very deeply cut by valleys and ravines, however, and the lower parts of the slopes are frequently very steep. As a result, crossing the region is easy for tanks moving in a direction parallel to the crests, but particularly difficult for those that must cross ravines in moving from one crest to another.

These large rises generally run in a north-south direction. The highest of these rises was near the Don, rising above it and the low ground on the opposite side to a height of more than 650 feet. This great plateau formed the background of

the field of battle. In certain directions there were stretches of terrain easily traversed by large armored units, while in others there were zones not easily traversed by the tanks of the defense.

Under these conditions, the commander exercising the initiative could make the best use of this terrain by employing his armored units along the broad summits of the rises. On the other hand, local defense reserves coming to attack the flank of the adversary were obliged to climb the steep slopes before meeting the attacking armored forces frontally. In addition, the general reserves of the defensive forces had to overcome the great obstacle of the Don before they could reach the zone of action.

In planning the battle to free the bend of the Don, the Germans made the best possible use of the terrain. They formed two main striking forces each with a front of more than 12 miles, disposed at the two extremities of the sector. Exterior flanks rested on the River and thus were secure from attacks of any consequence (see Sketch 1). Between the two was a zone of secondary activity some 37 miles wide.

The mission of the two striking forces was to make a deep penetration into the Russian position and then join forces in the vicinity of Kalatsch. The northern force, which was to make the main effort, was to push a considerable distance beyond the enemy's front; then, following the broad summit of the high ground near the River, it was to swing back southward toward Kalatsch. The southern force had the disadvantage of having to cross the Tchir, a tributary of the Don, at the start of the offensive. On the other hand, the southern force had a shorter distance to go to reach the common objective.

The accompanying sketches show the terrain and the maneuver. For the sake of clarity, only the water courses have been represented, since these, either by themselves or because of the slopes adjoining them, form the only natural obstacles. The valleys are quite heavily populated, the plateaus much less so. Several highways coming from the west converge on Kalatsch. A single railway comes from the west, crosses the field of battle, and then heads toward Stalingrad.

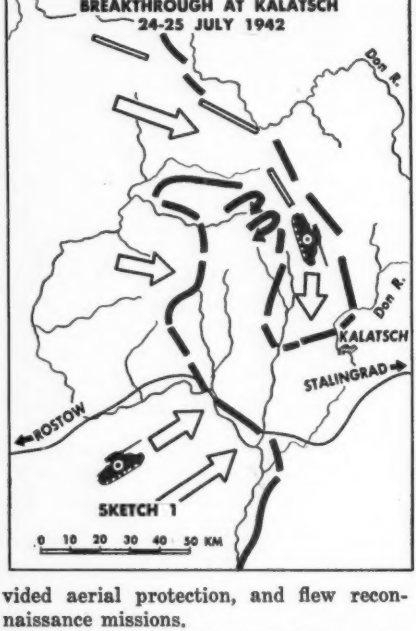
Estimated Strength

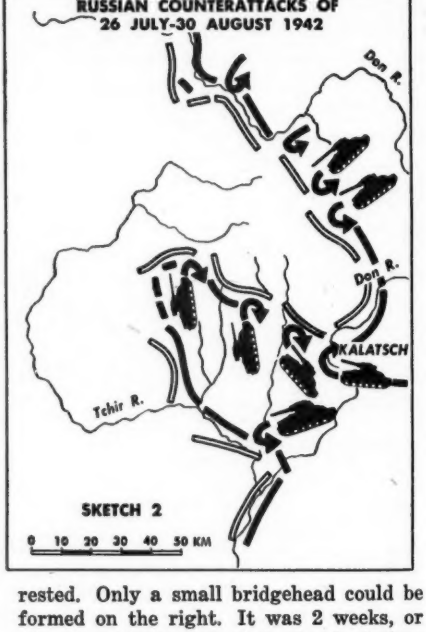
What was the strength of the forces which faced one another? About this, we know very little. We can only make estimates based on the events of the operation.

On the Russian side, the defensive front extended 80 miles, which required at least 10 divisions in the line. Back of this front, we may assume two or three divisions of infantry in reserve in the vicinity of Kalatsch and in the bend of the Don. These forces made up the Russian Sixty-Second Army. In addition, the First Armored Army was engaged during the course of the battle and largely destroyed. Within the pocket were found the remains of 7 infantry divisions, 2 motorized divisions, and 7 armored brigades. What these forces consisted of is not known exactly, but it can be assumed that in all the Russian forces consisted of 13 divisions of infantry, 2 motorized divisions, and 8 armored brigades.

On the German side, mention is made of an attack formation called the *Motpulk*, a sort of vast battering ram in the form of a quadrilateral, all sides of which were provided with armored units disposed in such a way as to penetrate the enemy front and stop lateral counterattacks. In short, the formation was designated to mop up large centers of resistance, which sometimes showed up in the interior of the system during the course of an advance. These *Motpulks* advanced rapidly without concerning themselves about the large infantry units which followed, clearing the terrain of secondary resistance. In this attack, the two *Motpulks* each had fronts more than 12 miles wide, and it may be assumed that at least six armored divisions were required to form them.

Moreover, the new front, toward the end of the operation, plus the circumference of the pocket in which the enemy was caught, measured nearly 145 miles. Taking into account the presence of armored forces, 15 to 20 divisions were necessary for the execution of this operation. Also, strong air units participated in the preparation of the attack, destroyed the enemy's communications (particularly the Don bridges), attacked the reserves, provided aerial protection, and flew reconnaissance missions.





One important element is lacking for the estimation of the opposing forces, that is, the relative values at this stage of the campaign of the Russian and German forces. There is no object in attempting to determine more exactly the strength of the forces engaged, since detailed documentation is lacking.

German Attack

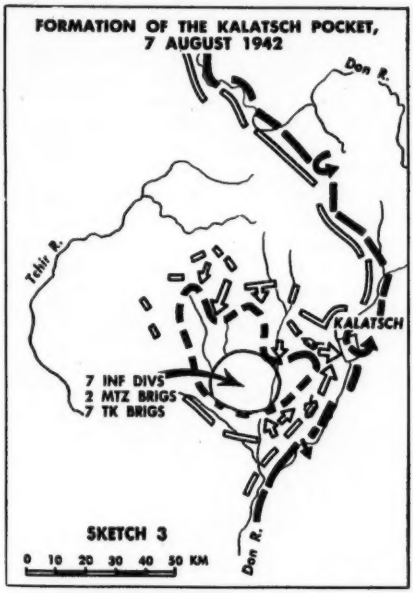
The German attack began on 24 July after intense preparation by artillery and aviation. The northern jaw of the pincers operated with complete success. By evening of the following day, it had reached the vicinity of Kalatsch, where it was stopped on the high ground by Russian forces which were protected by steep valleys.

On the south, the other jaw of the pincers did not have the same success. At the very outset, it was stopped along the Tchir River, on which the Russian defense rested. Only a small bridgehead could be formed on the right. It was 2 weeks, or almost until the end of the battle, before the southern force was able to continue its advance.

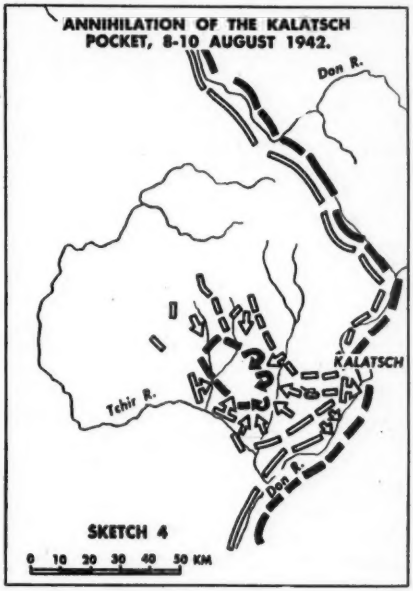
On the 25th, the Germans began organizing the two fronts on the northern jaws of the pincers. One front faced east and rested largely on the Don at its two flanks; in the center, it commanded the slopes of the valley. The second front faced southwest and extended from the former assembly position to the Don. The creation

of this pocket represented an advance of more than 55 miles across country in 2 days.

By the evening of the 25th, the German infantry divisions which had left the assembly position and which were to swing out and back on the right and the left had not been able to cover more than half the distance covered by the tanks. Taking into account the echelonment of the reserves at the departure, and delays in the advance, the time necessary for manning the front as far as Kalatsch must have been 4 or 5 days. The circumference of this pocket measured 100 miles; the Germans would have required more than 10 divisions, not counting the armored elements, to hold it.



SKETCH 3



SKETCH 4

Russian Reactions

During the first days of the attack, the Russian reactions were limited to attempts to break through the lines of the advancing Germans. A double arrow in Sketch 1 corresponds to the retreat of Russian units which had given way in the face of the secondary German attack in the center.

It is obvious that the establishment of a mass of German forces behind the Russian positions was sufficient to cause the disorganization of the forces occupying the sector. Even though no panic started, even though the troops were determined to hold, the fact that a new front had been established on their flanks and in their rear would have been sufficient to disorganize the Russian forces. As a result, the completely surrounded Russian forces were unable to show any serious reactions. In the beginning, the Germans had little to worry about on this score.

The German confidence is more easily understood when one considers the fact that the attack had passed from 20 to 25 miles back of the lines, far beyond the Russian division and corps reserves and beyond the zones accessible to any large extent to the Russian artillery if it had

faced about in its positions. On the other hand, there was a chance that the German attack would meet with large Russian reserves stationed in the rear near Katalsch, or near the Don. But if such reserves existed, it hardly seems probable that their presence would have escaped the German aerial reconnaissance.

After the German breakthrough, the main body of the German Air Force was able to devote itself to preventing the use of the Don crossings and to attacking supply columns and reinforcements en route from Stalingrad to the combat zone.

Faced with this situation, the Russian command reacted with all its ability (Sketch 2). Northwest of Kalatsch, the attack coming from the north was stopped and then slightly pushed back by reserve elements stationed in that area. At this moment, the front formed a very distinct "S," and it was a toss-up as to which side would cut off the bulge formed by the other's forces. The Germans had a solid front facing northeast; they were also moving into place, facing the southwest, the forces for closing the pocket occupied by the Russians. In order to create reserves, the Germans pulled out part of the forces operating opposite the west face of this pocket and on the more or less passive flanks of the front in that area. For its part, the Russian command brought up and engaged its First Armored Army with a view to cutting off the bulge created by the Germans. A third Russian armored force deployed in the Don Bend opposite the northwest face of the German bulge. The other two-thirds of the Russian armor crossed the Don in the Kalatsch area (no doubt a difficult operation) and attacked the southwest face of the bulge. Other elements attacked the southern German forces which had succeeded in establishing a foothold on the north bank of the Tchir. It will be noted that almost all the Russian tank units counterattacked along the same lines as the German units (see Sketch 2) because of the favorable terrain.

This counteroffensive in the bridgehead shows the Russian command's will to fight. The struggle lasted until 6 August without appreciable success. The somewhat tardy engagement of the Russian First Armored Army suggests a dispersion of effort. This was doubtless the effect of the many calls for help made by the Russian units. The objective of cutting off the German bulge is clear. However, if the approaches to the area had permitted, a massed engagement with superiority at one point would perhaps have been better.

On its part, the German command organized the attack in accordance with its first intentions, modifying the plan to conform to the circumstances and the terrain. On 7 August, the final phase of the battle began. The northern jaw of the pincers circled around those parts of the terrain where it had been stopped on 26 July west of Kalatsch. The southern jaw attacked on a smaller front, starting from the area where the Tchir River had already been crossed (see Sketch 3).

This time, the two attacks succeeded. The southern attack covered the 18 to 20 miles separating it from Kalatsch and met the northern attack near there.

The pocket was closed, and the final phase could now be carried out. This phase consisted, on the one hand, in pushing the retreating Russian forces back east of the Don, and, on the other hand, in squeezing together the encircled forces and turning them back toward the west. These attacks were conducted from east to west opposite to the direction of the Russian attempts (mostly at night) to break out of the encirclement (see Sketch 4).

At this time, there existed two German fronts which were attacking back to back, separated from one another by only 9 or 10 miles. The conditions were unusual, but practical, due to the maneuverability of the tank units. Hence, at the moment of collapse, the encircled Russian forces found themselves isolated some 18 to 20 miles from the new Russian front which

These captured German pictures show German troops and equipment employed in the Russian campaign. Above, a self-propelled assault gun, moving forward during an attack. Below, a 28-cm rocket launcher battery during a training exercise in August 1942; the battery is preparing to change position.—US Army photos.

was being established on the bank of the Don.

During the phase which was to end with the encirclement, German planes attacked the retreating Russian elements which were collecting at the Don in the vicinity of the demolished bridges.

Inside the pocket, the Germans captured 35,000 men, 270 tanks, and 560 guns. The Russian losses for the entire battle were: 57,000 prisoners, 1,000 tanks captured or

destroyed, and 750 guns. But even this booty does not approach that of 1941. Judged on the scale of the Eastern Front, it was a small battle. The Russians, however, were beginning to show evidence of recovery. Soon the fortune of battle was to change camps.

The Battle of Kharkov

The Kalatsch operation is of importance because it was typical. We find, however, the same characteristics in many other battles of World War II—at Kharkov, for example.

On 12 May 1942, on the Donetz front, the Soviets had attempted an encirclement operation by two forces. One started from the narrow Starsaltow bridgehead; the other, from a very much broader bridgehead located west of Izium. The two attacks were to meet at Kharkov, but they succeeded only partially. They succeeded in creating two pockets—a small one in the north and a larger one in the south.

The Germans then staged a counteroffensive whose main phase is shown in Sketch 5. In 5 days, the Germans placed four forces in position which attacked, two at a time, each of the flanks of the two pockets, the German east flank resting on the Donetz. The larger counterattack force, located on the south, cut through the Russian pocket in the Bereka area and the 10 brigades of tanks that were engaged there. The battle ended on 26 May with the destruction of the encircled forces and the establishment of a front along the Donetz.

These examples show one method by which large armored units can utilize terrain. Armored units cannot take advantage of their speed except in areas that are easily traversed. In hilly regions or on plateaus, armored forces must maneuver along the summits of the ridges. Large wooded areas or rock-strewn zones are needed to establish a blockade against armored forces.

The "S"-shaped fronts which develop in such operations may last a number of days and require almost twice the number of troops that are required for holding a straight front. Also, the presence of a large obstacle such as a river, sea, or mountain situated in the direction from which strong enemy reserves might come permits the application of the principle of economy of force and simplifies the maintenance of the units engaged in reducing pockets of resistance.

The type of battle just described does not lend itself, obviously, to every situation. It is often of interest, however, in cases involving the reduction of bridgeheads backed up against a large natural obstacle. To carry such an operation to a successful conclusion requires very maneuverable forces, a cool-headed commander, good aerial observation, and, at least, temporary air supremacy.

The British Army of the Rhine

Digested by the MILITARY REVIEW from an article in "The Army Quarterly" (Great Britain) October 1949.

MUCH has been written of the operations in Germany that led up to final victory in Europe on 8 May 1945, but there are few accounts of the ensuing 4 years. During this time, political, social and military events in Germany have developed in a way that few could have foreseen. The British Army of the Rhine has had to compete with many formidable tasks and adjust itself, both in conduct and in outlook, to the changing conditions.

The purpose of the Allied occupation was to ensure that Germany would never again be able to disturb the peace of the world. This was to be achieved by disarming and disbanding the German armed forces, by removing or destroying all their military equipment, by preventing the redevelopment of a war potential in the many industries, by exacting reparations, and by the trial of war criminals.

The principle of a common economy for Germany was agreed by the Allies at Potsdam. The German political system, shattered by years of National Socialism, had to be reconstructed so that she could eventually take her place peacefully in international life. Her economy, broken by the war, had to be rebuilt to ensure a reasonable standard of living.

Preparations for the administration of conquered territories in Northwest Europe began in England in 1943. The first instruments, Military Government and the Civil Affairs Organization, followed in the wake of the advancing armies and, backed by the presence of those armies, began to establish law and order. In July 1945, the Control Commission set up its main headquarters in the British zone, with an advanced headquarters in Berlin.

After VE-day

While Civil Affairs and, later, the Control Commission were assuming responsibility for control of governmental and economic affairs, the Army in Germany was engaged in tremendous tasks of its own. On VE-day, the British operational formations in Germany consisted of 2 armored divisions, 9 infantry divisions, 7 armored brigades, 1 infantry brigade, 19 antiaircraft brigades and 7 army artillery groups.

When hostilities ceased, 21st Army Group reorganized and regrouped for its new role. The priority of effort was allotted to the disarmament of German troops, the removal of ammunition and explosives into dumps, the demolition of defenses and the clearance of mine fields. At the same time, there were tens of thousands of British prisoners to be evacuated and many missing to be accounted for. There began one of the biggest searches in history, the Army working in conjunction with the Royal Air Force and the United Nations Relief and Rehabilitation Administration Tracing Bureau. Eventually, this work was taken

over by the Control Commission which extended its activities to tracing people of all nationalities who had disappeared in the British zone.

During these early months, the Services worked hand in hand with Military Government and, after July 1945, with the Control Commission to restore order out of chaos. The people were stunned and helpless; civil administration did not exist. Gradually local self-government was restored, the police and fire services reorganized, schools reopened and health and welfare facilities revived.

As the armies had advanced into Germany, a vast number of slave workers had been liberated. Outrages of all kinds, thefts and looting were rife amongst these people in their lust for revenge and their search for the necessities of life. They had to be fed, housed and, as far as possible, kept under control. This task initially fell to the lot of the British soldier. Within 3 months, nearly 2 million had been repatriated, mostly by rail.

The opening of rail communications was a tremendous undertaking. As an example, Hamm, well known to radio listeners and the object of many a joke in the bleak days of the war, is worth mentioning. Prior to 1939, it was one of the chief railway communication centers in the Ruhr; it handled 1,200 cars a day, had the best telephone system in the world, and used 400 separate tracks. From 1940 onwards, it had been a major bombing target. When the Americans entered the city in August 1945, not one of the 400 tracks was in working order, the famous marshalling yards were in chaos, station buildings, signal boxes, and locomotive sheds were heaps of rubble, and all bridges and culverts were destroyed or damaged.

Elsewhere, the destruction was much the same. It was in those conditions that the Army had to set to work to establish a line of communications to maintain itself through Hamburg and to open up a route to the Hook of Holland as well as internal routes to meet the immediate requirements of the Services and of the civilian population. Slowly but surely the vast machine creaked back into life.

Demilitarization

By VE-day, 3 million prisoners, all of whom had to be disbanded, had been taken in the British zone. Initially, the German commanders were ordered to continue their administration under British control, any other course being impracticable with such numbers. During the next few months, they were gradually disarmed and the majority dispersed to their homes. The first to be released were the farm workers; during June 1945, 1 million of them were discharged to rescue the harvest. Technical units were temporarily attached to the Army to assist in such tasks as the restoration of communications and the clearance of mine fields. By May 1946, the following former members of the German armed forces had been disposed of:

1. Discharged	2,483,000
2. Transferred to US zone	367,000
3. Transferred to French zone	14,000
4. Transferred to Soviet zone	43,000
5. Transferred elsewhere	94,000
	3,001,000

The clearance of battlefields and the disposal of all armaments and equipment were achieved by collecting everything into dumps. The disposal of the material from these dumps was achieved in a variety of ways, including dumping in the sea and the adoption of some of it for use for the German civil economy. All military installations, mine fields, fixed defenses, military buildings, submarine pens, pill boxes, flak towers, ranges and testing grounds had to be cleared. The bulk of the work has now been done, but isolated installations are still being destroyed as they become available.

Some of the demolition work called for great tact and firm handling. Whenever

possible, military structures were converted to peaceful purposes such as blocks of flats, their warlike characteristics being destroyed in the conversion. When a large demolition was essential, care was taken to avoid unnecessary damage to local buildings, particularly houses. It is recorded that the Engineers on one occasion filled 70,000 sandbags to protect one row of German dwellings. Industrial disarmament was mainly the responsibility of the Control Commission, but the services were very much involved in the assessment of the war potential of the various categories of targets.

The identification, apprehension, and trial of war criminals were the responsibility of the Army. Thousands of special searches were carried out, ranging from tracing a German who was accused of ill-treating a British pilot, which lasted 15 minutes and ended in the arrest of the band leader at the local officers' club, to the search for an SS General responsible for the extermination of thousands of concentration camp victims, which took many months and ended in a dramatic but unsuccessful attempt to swallow a phial of cyanide. Among the more important trials were the Belsen, Neuengamme, and Ravensbruch Concentration Camp trials and that of 19 war criminals concerned in the shooting of 50 Royal Air Force officers who had been captured after escaping from Stalag Luft III. The destruction of the notorious Belsen Camp was carried out with efficiency and satisfaction by flame throwers of 79th Armored Division.

The Army in 1947

By the middle of 1947, the British Army of the Rhine had been reduced to one armored and two infantry divisions, one independent armored brigade and three independent armored car regiments. In addition, there was a Belgian Corps of two divisions, a Danish Brigade Group and a Norwegian Brigade Group. These contingents still help in the occupation of the British zone.

The Polish formations had been disbanded and the majority of the personnel dispersed either to Poland, to the Polish Resettlement Corps in the United Kingdom, or to discharge in Germany.

Labor

With the great reduction in the number of British troops, it has been necessary to employ many civilians. The majority of these are engaged locally for duties in connection with the administration of the services and their families. There is also the German Civil Labor Organization, mobile groups and companies of civilian volunteers controlled by British supervisory personnel. Many have been prisoners in Britain, the Middle East, or Canada. They live in barracks or requisitioned buildings and have a special scale of rations. They are mostly employed on transport, transportation, workshop, and general labor.

Men clad in blue battledress and wearing blue berets are a familiar sight in the British zone. They belong to the Civil Mixed Watchmen's Service and the Civil Mixed Labor Organization. Recruited mainly from Poles and Central Europeans who cannot, for one reason or another, return to their native lands, they are ex-soldiers employed in the protection of barracks, dumps, and installations against pilferage, and in transport duties. Were it not for them, hundreds of British soldiers would have to be employed on irksome but necessary duties. Their turnout and bearing are good. Many of them are now emigrating to the Dominions under the auspices of the International Refugee Organization. Some for reasons of health, lack of a trade, or failure to qualify under the conditions laid down by the International Refugee Organization, cannot go. They are part of the tragedy of Europe and these organizations give them work and self-respect.

Frontiers and Internal Security

The frontiers with Denmark, the Netherlands and Belgium are closed frontiers and the responsibility of the Control Commission. The boundaries between the British, American, and French zones are virtually open frontiers, but that between the British and Soviet zones has remained closed, control being exercised by restricting crossing points and by the patrolling of civilian frontier police, backed up by armed patrols. Because of its length, this boundary has never been fully sealed and large numbers of refugees have continued to cross from east to west. Incidents have occurred from time to time when soldiers have inadvertently or foolishly crossed over the border, but on the whole there has been little trouble.

In the zone, the presence of the Army has prevented any real trouble. One or two strikes have passed off peacefully. Resentment by the Germans at the destruction of any building has increased and the dismantling of plants in accordance with agreed Allied plans has sometimes caused local disturbances, but the Army has rarely been called on.

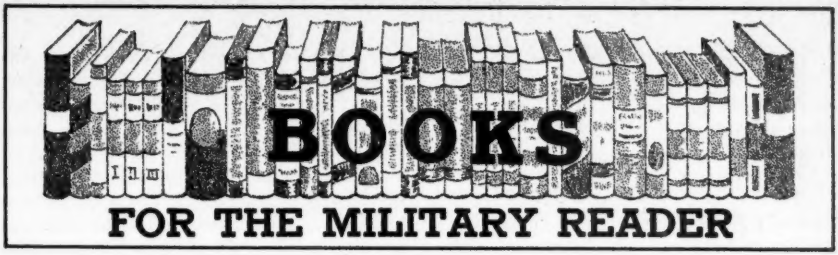
Relations with the Germans

British policy has been to control the zone indirectly and to build up the German administration from the bottom so that the country can stand on its own. At first, the Germans were apathetic, naturally thinking more about the immediate problems of food, houses, and the necessities of life. Disillusionment was rife and there was a collapse of moral standards, but as conditions improved, public interest in politics and administration developed. As part of the process of moral regeneration, trade unions, youth groups, religious movements, and similar organizations were encouraged. All the time, the task of clearing Germany from the taint of Nazism went ahead. Through the medium of Advisory Boards, set up throughout the zone, suspects were removed from public office and particularly from the information services.

For the first years of the occupation, the lot of the Germans was inevitably and justly hard, particularly during the severe winter of 1946 and the food shortage of 1947. But the currency reform in July 1948 had an electric effect. It caused a complete transformation and was indeed a social revolution. Money obtained a real value, the black market practically ceased to exist, and the shops were filled with goods. There was an incentive to work and the absentee rate dropped from 30 percent to negligible figures.

As the German morale developed, so was the official policy for our attitude towards them changed from the non-fraternization of 1945 to an outlook of "one Christian and civilized race towards another, for whom we no longer have any ill-will." Those were the words of the Military Governor. Some five thousand marriages have taken place, although the process of application and approval is designed to give ample opportunity for the individual to make up his mind. Many soldiers have friends among the Germans, but for the younger ones, work, hobbies, unit life and recreation take up most of their time. Amongst officers, there is little contact with the Germans except with employees although various measures exist for cultural and sporting contacts.

The country has many beautiful features, and travelling about, one realizes that the Germans are obviously a people of mechanical and architectural skill—the *autobahns* are evidence of this—but one cannot help but feel that it is a country that has thrown away its opportunities and its happiness. Now they have a great opportunity to make good.



OVERTURE TO OVERLORD. By Lieutenant General Sir Frederick Morgan. 302 Pages. Doubleday & Co., New York. $4.00.

Overture to Overlord is an outstanding book, not only because it is one of the few books to treat military planning with clarity, but also because it is one of the most important works so far published on World War II.

The book is the story of COSSAC, Chief of Staff to the Supreme Allied Commander (designate), the organization which General Morgan himself headed. It was the planning of COSSAC that made possible the successful invasion of Northwest Europe in 1944.

The detail of the book is concerned primarily with those complexities of military operations which involve research and study, and operational and logistic planning. Early in 1943, the Combined Chiefs of Staff decided it was time to begin plans for re-entering the Continent of Europe. They created COSSAC and set General Morgan to the task.

General Morgan began his work under great difficulties. Among these was the creation of a staff of both American and British officers, representing all three services of each nation. The success which General Morgan achieved in composing national as well as service viewpoints is an example of real leadership at work.

Among other difficulties, the planners had to work for a year before they knew who would command the invasion. They did not know what forces or strength would be available. When they determined the vast quantities of matériel that would be required, they had to find out if Allied industrial capacity could produce it. And they had to aim at an invasion date not yet determined.

The book gives some interesting sidelights on the selection of the Supreme Commander. At first, it appeared that the commander would be a British general. As plans progressed, it became more evident that he would be an American, probably General Marshall. When General Eisenhower was selected and took over in January 1944, and COSSAC became SHAEF, the plans for the invasion were far advanced. Just how sound the plans were is evidenced by Eisenhower's general approval of them, and by the success of the invasion itself.

Overture to Overlord is a well-written book. It reveals the author's depth of understanding, wide perspective, and humor. It provides interesting glimpses of the great war leaders. And there are many revealing comments on such things as the Mulberry harbors, cross-Channel pipe lines, Bailey bridges, the Dukw, the *C-47*, and the jeep.

At times, General Morgan becomes profound, as in this sentence which seems to contain the gist of his book:

"The more scientific warfare becomes, the more scientific must be its planning and preparation, but victory belongs not to those who forge the weapon, but to him who is gifted with the artistry to wield it."

MODERN ARMS AND FREE MEN. A Discussion of the Role of Science in Preserving Democracy. By Vannevar Bush. 273 Pages. Simon and Schuster, New York. $3.50.

Many men have attempted to assay the role of science in modern warfare and to foretell its effect on modern political institutions, but few have presented their conclusions so clearly and objectively as Dr. Vannevar Bush has done in this small volume.

As head of the Office of Scientific Research and Development during World War II, Dr. Bush directed some 30 thousand scientists in wartime activities. His views, therefore, have unusual significance and validity.

Alarmists who picture the end of mankind through employment of the atomic or biological weapon in future warfare find no confirmation in Dr. Bush's analysis. Without minimizing the dangers which science has increased, he is convinced that a future war would not end the progress of civilization nor destroy democracy. On the contrary, he sees in modern science a source of new power for free men in preserving freedom.

In the author's opinion, conventional mass bombing may already be obsolete. Large-scale atom bombing in war is not considered imminent. Engagements of large fleets and large battleships are probably a thing of the past. Biological warfare is considered an unlikely factor in actual warfare.

There is no complacency in Dr. Bush's outlook, however. He sees real danger in not being prepared and in not recognizing the important role that science plays in modern war. He strongly urges an adequate organization in the Military Establishment for deliberate military planning in all its aspects, not merely the strictly military part. He further sees the need for more effective scientific intelligence. As for the adequacy of democratic processes in the face of grave emergency, he says: "It is a sound political system that projects into power primarily men who know men."

This is a thoughtful book on the major problems that face free nations at the present time; further, it is one that cannot fail to arouse keen interest among all military readers.

MY THREE YEARS IN MOSCOW. By Lieutenant General Walter Bedell Smith. 346 Pages. J. B. Lippincott Company, Philadelphia. $3.75.

General Eisenhower's Chief of Staff, turned diplomat for 3 important postwar years in Moscow, has written a significant book on United States—Soviet relations. General Smith was designated American ambassador to Moscow early in 1946, not only because of his high personal qualifications, but because events indicated that a military man would be more effective in that particular post at that particular time. Events have proved the correctness of this estimate. General Smith's book gives a clear picture of Soviet policy in the postwar years, but it goes far beyond just the diplomatic negotiations. The general proves himself an astute analyst of the Soviet system and a searching student of the Russian people, their leaders, and institutions.

HISTORY OF UNITED STATES NAVAL AVIATION. By Archibald D. Turnbull and Clifford L. Lord. 345 Pages. Yale University Press, New Haven. $5.00.

INDIA, PAKISTAN AND THE WEST. By Percival Spear. 232 Pages. Oxford University Press, New York. $2.00.

THE CRUCIBLE. An Autobiography. (An account of guerrilla operations in the Philippines). By "Colonel Yay." 348 Pages. The Macmillan Company, New York. $3.75.